# PHILOSOPHICAL

# TRANSACTIONS

OF THE

# ROYAL SOCIETY

OF

# LONDON.

FOR THE YEAR MDCCCXXVI.

PART IV.

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MDCCCXXVI

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ERRATA.—PART III.

In Mr. HERSCHEL'S Paper on the Parallax of the Fixed Stars.

Page 272, line 21, for "sin. $l$" read "sin. $\lambda$."
—— 274, line 15, for "sin. $l$" read "sin. $\lambda$."
—— 274, line 17, instead of the equation there set down, read as follows:

$$\text{Sin. } \lambda . \tan. (\odot - l) = \tan. (\pi - \sigma) ; \qquad (2)$$

In consequence of these corrections, the dates in Col. 5 of the table page 277 and 278, which have been inadvertently computed from the erroneous formula, are for the most part incorrect.

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Page 347, line 16, for *crest*, read *crust*.
—— 348, line 10, supply a comma after "upon it," and omit one after "covers it."
—— 361, line 3, for "*those*," read "*of those*."
—— *ib.* line 7, for "*the length*," read "*a length*."
—— 365, line 12, for "*particular*," read "*particularly*."
—— 371, line 6, supply a comma after "*ligament*," and omit one after "*cuticle*."

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ERRATA.—PART IV.

Page 24, Col. Mean Chron. line 6 from bottom, *for* 2 15 52,44, *read* 2 16 52,44.
And in Col. Mean Clock, last line, *for* 22 20 13,25, *read* 12 20 13,25.
—— 31, The second register of the State of the Barometer on the morning of the 18th of June, *for* Beg$^{g}$. *read* End$^{g}$.
—— 73, line 12, *for* encreasing, *read* increasing.
—— 106, opposite April 14th, *insert* A. M.
—— 126, line 11, *for* Appendix, *read* Appendices.
—— 127, wherever the word axis occurs, *read* axes.
—— 151, Col. reading of North End of needle, line 18 from bottom, *erase* the sign (+).
—— 189, line 10 from bottom, *after* figures 3, 4, and 5, *insert* Plate VI.
—— 209, lines 6 and 7 from bottom, *for* Tables VIII. to XI. *read* VII. to XII.

# PHILOSOPHICAL

# TRANSACTIONS.

I. *Account of experiments made with an invariable pendulum at the Royal Observatory at Greenwich, and at Port Bowen, on the eastern side of Prince Regent's Inlet. By Lieutenant* HENRY FOSTER, *R. N. F. R. S.*

Read April 6, 1826.

THE determination of the length of the seconds' pendulum in different latitudes, is a subject, that has long been considered of much interest and importance, but more especially of late years, since the practical problem has received from the ingenuity of Captain HENRY KATER, certain improvements and simplifications, which have rendered its results more accurate than had ever before been obtained.

With the nature of these improvements I had already become acquainted when in H. M. S. Conway, with Captain BASIL HALL, on the South American station, where, as will be seen in the Philosophical Transactions for 1823, several series of experiments were made by that officer and myself. Soon after my appointment to the N. W. Expedition under the command of Captain W. E. PARRY, the Board of Longitude, at the suggestion of Captain KATER, did me the honour

to entrust me with an invariable pendulum; and the details of the observations made with this instrument, together with a statement of all the attendant circumstances, are given in the following pages.

The first set of experiments, which are marked (No. I.), were made at the Royal Observatory at Greenwich, in an apartment to the S. W. of the Transit Room, originally intended, I believe, for the observations of the eclipses of Jupiter's satellites, but upon this occasion kindly appropriated by Mr. POND to my use. This room has a solid stone floor, on which the triangular supports for the pendulum and clock were placed. The roof is low, and being composed of wooden panels, the temperature of the room was materially affected by the state of the weather; on one occasion the thermometer ranged four degrees during the observations, although the light was admitted by a window on the north side.

In the adjustments of the instruments employed in the experiments, I strictly adhered to the mode described by Captain KATER, in his paper read before the Royal Society in June, 1819. The intervals between the coincidences were determined by the disappearance of the white disk on the pendulum of the clock behind the tail-piece of the pendulum, and also by the mean of its disappearance and re-appearance. I was induced to take this additional trouble, in order to remove all possible objections which might be raised as to the accuracy of the result; and partly that I might, by actual trials, furnish materials for putting at rest the controversy on this subject. The method of disappearances has been followed by Captain KATER, and more lately by Captain BASIL

HALL and General Sir THOMAS BRISBANE; that of taking a mean between the disappearance and re-appearance of the disk, has been practised by Mr. GOLDINGHAM at Madras, and by Captain SABINE. Theoretically, the mean of the disappearance and re-appearance, would give the true moment at which the two pendulums coincided at the lowest part of the arc of vibration, were it the object of this problem to determine that moment: but it is not:—the experiment being strictly comparative;—and the method of disappearances accomplishes all that is sought after, with perfect certainty, and with less than half the trouble. It may, however, be useful to know, that both methods give identically the same results; that is to say, the number of vibrations of a pendulum determined by the method of disappearance at one station, compared with the number deduced by the same method at another, give precisely the *same* acceleration or retardation as that which would result from comparing the number of vibrations at the first station, ascertained by taking the mean of disappearance and re-appearance, with those of the second station, ascertained by the *same* method. The results of the experiment contained in the following paper show this very obviously, as follows:

| Vibrations by the method of disappearance alone at | | Vibrations by the method of mean of disappearance and re-appearance at | |
|---|---|---|---|
| Greenwich, . . . . . | 86159,368 | Greenwich, . . . . . | 86159,500 |
| Port Bowen, . . . . . | 86230,172 | Port Bowen, . . . . . | 86230,313 |
| Acceleration by the method of disappearance . . | = 70,804 | Acceleration by the mean of disappearance and re-appearance . . . | = 70,813 |

The difference of the results amounts only to 9 ten-thousandths of a vibration in 24 hours.

This, it may be observed, is the end and object of the problem; which, as I have before stated, is strictly a comparative one; and the only thing to be insisted upon is, that the *same* method should be followed, and the *same* adjustments of the apparatus strictly adhered to, at all the stations which are to be compared together.

Supposing, however, that the vibrations recorded in the present experiments, ascertained by the one method, were compared with those determined by the other, the results would differ only 0,14 of a vibration in 24 hours; a quantity which does not occasion a difference of two ten-thousandths of an inch in the length of the deduced seconds' pendulum, nor of an unit in the denominator of the fraction expressing the ellipticity.

There are cases, of course, dependant on the relative diameter of the white disk, to that of the tail-piece of the pendulum, in which a greater or less difference than the above would exist between the two methods so compared; but this is of no importance whatever, as the object of the problem is fully accomplished by adhering to the *same* method, whichever it be, at both stations, as before stated. It may not be useless to mention also, that Captain KATER did not adopt the method of disappearances in his comparative experiments, until after innumerable trials of other plans, including that of taking the mean of disappearance and re-appearance of the white disk; all of which he eventually abandoned for that of disappearances alone; and it is certainly to be regretted, that he did not publish an account of these unsuc-

cessful trials, as it might have saved myself and others, much unnecessary labour.

The clock used in these experiments was fitted with a gridiron pendulum, vibrating on knife edges in portions of hollow cylinders of agate, and belonged to the Royal Society. It was put in motion at Greenwich on the 17th of April, 1824, three days previous to the commencement of the experiment, and its rate ascertained by comparisons with the transit clock of the observatory each day at noon, and also during the series, at the commencement and at the conclusion. In these essential observations, I was kindly assisted by Mr. T. Taylor, jun. of the Royal Observatory.

In making the observation of the coincidences, the following mode was pursued.

The pendulum being placed in the Y's, was gently lowered until the knife edges rested on the agate planes; and the sides of the diaphragm placed in the focus of the eye-piece of the small telescope, were made just to coincide with, or embrace those of the tail-piece of the pendulum; and this adjustment was examined previous to every observation. The heights of the barometer, and of the thermometer suspended with its bulb about $\frac{2}{3}$ of the length of the pendulum below its point of suspension, and about $\frac{3}{4}$ of an inch in front of the middle of the bar, were taken and registered at the beginning and end of each set of observations. The pendulum was set in motion, by drawing it gently on one side with a piece of twine fastened to one of the legs of its support, until the point at the end of the tail-piece, was about 1°,2 upon the arc; and a little before the pendulum of the clock attained its highest ascent on that side, the twine was let go, and the pendulum allowed to vibrate freely.

The number of vibrations made by the pendulum in 24 hours reduced to the level of the sea, in vacuo and at a determinate temperature, were computed by the methods detailed in Captain KATER'S paper before referred to.

The second experiment marked (No. II.) was made at Port Bowen, on the eastern side of Prince Regent's Inlet, where the ships passed the winter of 1824–25.

The observatory house, prepared in frame at Deptford, having double walls and roofs, three inches apart, was erected early in October on the north side of the harbour, upwards of a hundred feet above the level of the sea, on a bed of secondary limestone, of which this place is composed; the upper stratum consisted of small loose stones, that could only be removed to the depth of a few inches, below which, it was frozen so hard, that little impression could be made by the action of crows and pickaxes.

The high table land, which characterises this coast, rises directly from the sea, on the south side of the harbour, to the height of between six and seven hundred feet; the upper part, presents a perpendicular cliff of one or two hundred feet, exhibiting alternate black and white horizontal stratifications of secondary limestone; it is also deeply excavated in a variety of places by the action of the weather on its less durable parts, thus giving to its outline the appearance of ruined towers and other ancient edifices. The debris, which has fallen from the upper part of the rock, has formed a steep shelving bank or "talus" along its base, except at those places where its outline is intersected by ravines, and here, projecting points are formed of the materials brought down by the melting of the winter's snow.

To the eastward, at the head of Port Bowen, there is an

extensive water course, and a low flat beach extending a quarter of a mile, and interrupting the high table land for the whole of that space. The land on the north side of the harbour from the head of the Port to Stoney Island (which lies about $\frac{1}{3}$ of a mile to the S. E. of the observatory), is similar in character to that already described on the south. From Stoney Island to the north point of entrance, the coast land is not above 200 feet high, but rises to the height of 900 feet at a little distance in the interior.

The house was placed with its length at right angles to the meridian, and divided into two apartments; one was 10 feet square; the other was five feet wide, 10 feet long, and 10 feet high. For conducting the various observations in the winter, the former of these was lined with a thick woollen cloth called *fearnought;* the floor boarded, and a stove placed in it; the latter, being for the use of the transit instrument, had a slit 18 inches wide cut through the walls and roof, and a large stone placed on the top of a cask filled with sand, formed the pedestal for the instrument.

Previous to the commencement of the experiments with the pendulum, it became necessary to remove the boarded floor, and block up the door opening into the room from the outside: the entrance now being through the slit into the transit room; the door in the middle of the partition between the rooms was protected by screens of canvas and *fearnought* on each side. The surface of the ground was then cleared away to as great a depth as possible, and large flat stones filled in with sand, formed the foundation for the supports of the pendulum and clock: care was also taken, that each support should stand on separate and unconnected stones;

additional solidity was given to the supports, by attaching to the hindmost leg of each, a mass of lead, weighing from 40 to 50lbs. The clock was now fixed to its support; but the pendulum of experiment remained on board the Hecla, until all the necessary preparations were completed. The small telescope containing the diaphragm, and used to observe the coincidences, was placed at the proper distance ($9\frac{3}{4}$ feet) from the pendulum, on its stand outside of the room, in a porch originally erected for the use of the repeating circle: this stand was sunk so far into the ground, as to bring the object-end of the telescope, on a level with the bob of the pendulum of the clock. An aperture of a foot square was found sufficiently large for observing the coincidences, as well as the face of the clock, when sitting at the telescope, which was sheltered by a screen of canvas from any rush of air into the room, on opening the door of the porch.

A transit instrument made by DOLLOND, of thirty inches focal length, and two inches aperture, was cemented to the pedestal already described, with plaister of Paris, at the latter end of October, and brought accurately into the meridian by the transits of high and low stars. A mark was then set up at the distance of 506 feet, to which it was afterwards always adjusted before making an observation: towards the end of March, the sun's rays caused such an apparent wavering of the meridian mark, as to render its removal necessary, and it was accordingly transferred from the exposed situation where it stood at first, to the opposite side of the harbour, a distance of 6697 feet, where, being fixed in a hollow part of the rock, and completely shaded from the sun, it ever afterwards afforded the means of adjusting the

instrument in a satisfactory manner, being perfectly steady and distinct.

The allowance made for expansion, not being the result of experiments actually made on this particular pendulum, but from the deductions resulting from Captain KATER's experiments on a bar exactly similar, it became important in order to render the experiment strictly comparable with that at Greenwich, to keep the temperature of the room as near as possible to the one in which the previous experiments had been performed in England, namely, 50°. From the smallness of the room it was soon found, that the stove placed within it, produced incessant fluctuations in the temperature; it was therefore removed outside, to about six feet from the north wall of the house, and sunk into the ground level with the foundation of the observatory; built round with stones, and a tent was pitched over it. The room was now warmed by the smoke-pipe passing through it; and, to preserve the temperature of the pendulum more uniform, a large triangular covering of *fearnought* lined with racoon skins, was made to enclose the whole apparatus, except that part of the front required for observation. These arrangements effected the object so far, that the temperature of the room was seldom more than 3°, and frequently not one from 50° during the observations. By a SIXES' self-registering thermometer, the mean range of temperature to which the pendulum was exposed in 24 hours was only 8°, and the extreme not more than 12° during the series in June, whilst that of the atmosphere, varied from 23° to 47° of FAH. without any uniformity.

Under these circumstances the pendulum of experiment was placed in the Y's on the 29th of May, 1825, and the

adjustments finally completed on the 1st of June; the clock put in motion, and the apparatus for measuring the arc of vibration fixed in its place; the barometer and thermometer were also suspended after the manner described in the experiments at Greenwich.

The perfect stability of the point of suspension being of the utmost consequence, spirit levels were arranged on the top of the pendulum frame and clock case, to indicate any giving way in the foundation of their respective supports from the effects of thaw, which at this time very generally prevailed; the foundations however remained solid, and the adjustments were preserved, during the whole course of these experiments, which were not commenced to any good purpose before the 14th of June, owing to an unfavourable change in the weather. This took place on the 7th of June, and was such, as rarely to permit a sight of the sun, and not one glimpse of the stars during the above interval from the 7th to 14th.

In ascertaining the rate of the clock, I was confined to the transits of the sun at noon; of Arcturus and $\alpha$ Lyræ when passing south of the zenith. The sun's transit at midnight could not be taken, in consequence of the undulations of his limb, caused by being too near the top of the high land in that direction; neither could $\alpha$ Lyræ be seen soon after noon, from the general hazy state of the atmosphere at the elevation of 22 degrees. At the time of the sun's transit his rays were prevented from touching any part of the instrument, by a screen of canvas placed between the object-glass of the telescope and the slit in the roof of the house; it had a small hole, through which the observation was made, but being

always covered except at the moment of noon, I had reason to believe that none of the adjustments were ever disturbed. In observing the times of transit, a steady going chronometer made by HENRY FRODSHAM was used, and was found particularly convenient from its beating half seconds. A comparison between the clock and chronometer, was always taken before and after the passage of either sun or star. The time of transits shown by the face of the clock, was then deduced by direct proportion. All the comparisons are given in a separate table.

It occasionally happened, owing to the state of the weather, that one of the stars was partially obscured at the time of its passing the meridian, so as to limit the observation to one or two wires only, whilst the transit of the other, over the whole five was obtained; in such cases the mean of the rates for the clock has been deduced, by giving a value to each, in the ratio of the number of wires observed.

In the observation of the coincidences, the same mode was followed as in the experiments at Greenwich. The temperature of the pendulum, however, was more frequently taken by means of a small telescope, placed outside of the room, at a window to the south, and on the same level with the thermometer, suspended a little below the middle of the pendulum for that purpose.

The weather on the whole was favourable during this series; it became somewhat unsettled toward the close; but as no day passed without at least one transit for the rate of the clock, I had no reason to be dissatisfied with any of the observations taken.

A second series was made in July, under more favourable

circumstances of weather, the results of which, differ only one-tenth of a vibration in 24 hours from those in June. The total number of factors for the first series being 275,5, and for the second 66, a mean in that ratio has finally been taken.

The experiment marked III. was made at the Royal Observatory at Greenwich in November, 1825, after the return of the Expedition.

The number of vibrations in 24 hours, deduced from this experiment, differing more than was likely to arise from errors in observation, being 0,24 of a vibration in excess of the number obtained before leaving England in 1824, I thought it right to repeat the experiment, especially as the rate of the clock appeared to be somewhat unsteady. The results of this repetition, made with the rate of the clock more uniform, being precisely the same, I have not considered it necessary to give them in detail.

The difference alluded to in the number of vibrations of the pendulum in 24 hours, being on that side which would arise from the effects of wear of the knife edge of the pendulum, and which seemed probable, from the fine metallic line distinguishable on the agate planes after its removal, I feel disposed to adopt this explanation; and assuming an equable wear, I have taken the mean of the first and last series, as the actual number of vibrations made at Greenwich, to compare with those at Port Bowen, which being intermediate, of course required no correction on that account.

The results of this comparison are given in a subsequent page preceding the third set of experiments. It will therefore be sufficient to state here, that the ellipticity of the earth deduced from these experiments, appears to be $\frac{1}{309,2}$.

The experiments above described are of a nature to require, at every stage, the utmost degree of care; since an error, very small in apparent amount, either in the observations themselves, or in the subsequent computations, may prove fatal to that minute accuracy, without a due attention to which the nice objects of this problem might easily elude our notice.

It will readily be understood, therefore, by every one conversant with such undertakings, that the observer, besides possessing adequate leisure, must be duly assisted in all parts of his progress by those persons with whom he is associated. And as it has been my good fortune to meet not only with the heartiest encouragement, but also the most efficient co-operation from the Commander of the Expedition, throughout the whole course of these and various other delicate researches, I feel it my duty not less on public grounds, than as a matter of private respect and gratitude, to make this acknowledgment of the source, to which every thing that may appear valuable in these enquiries is justly to be traced.

HENRY FOSTER.

## No. I. *Pendulum Experiments at the Royal Observatory at Greenwich*, 1824.

April 1824.

Comparisons of the Clock with the Observatory Transit Clock.

| Date. | Time by Clock. | Time by the Observatory Clock. | Mean Time at Greenwich | Clock slow of Mean Time. |
|---|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. | h. m. s. |
| 20th Noon | 0 17 00 | 2 55 15,45 | 1 1 3,07 | 0 44 3,07 |
| P. M. | 3 38 00 | 6 16 48,84 | 4 22 3,47 | 0 44 3,47 |
| 21st A. M. | 7 12 00 | 21 53 24,66 | 7 56 5,96 | 0 44 5,96 |
| Noon | 11 22 00 | 2 4 6,42 | 0 6 6,72 | 0 44 6,72 |
| P. M. | 3 50 00 | 6 33 51,20 | 4 34 7,38 | 0 44 7,38 |
| 22d A. M. | 7 56 00 | 22 38 00,22 | 8 40 9,60 | 0 44 9,60 |
| Noon | 11 42 00 | 2 28 9,48 | 0 26 10,08 | 0 44 10,08 |
| P. M. | 3 30 00 | 6 16 47,16 | 4 14 10,35 | 0 44 10,35 |
| 23d A. M. | 8 5 00 | 22 54 32,95 | 8 49 12,75 | 0 44 12,75 |
| Noon | 11 22 00 | 2 12 5,85 | 0 6 13,25 | 0 44 13,25 |
| P. M. | 3 32 00 | 6 22 47,40 | 4 16 13,73 | 0 44 13,73 |
| 24th A. M. | 7 38 00 | 22 31 27,81 | 8 22 15,56 | 0 44 15,56 |
| Noon | 11 21 00 | 2 15 5,0 | 0 5 16,20 | 0 44 16,20 |
| P. M. | 3 37 00 | 6 31 47,41 | 4 21 16,57 | 0 44 16,57 |
| 25th A. M. | 8 17 00 | 23 14 33,70 | 9 1 18,64 | 0 44 18,64 |
| Noon | 11 18 00 | 2 16 4,20 | 0 2 19,40 | 0 44 19,40 |

From the preceding Table of Comparisons, this, of Rates losing has been deduced.

| Time of Comparison. | From 20 to 21 | From 20 to 22 | From 20 to 23 | From 20 to 24 | From 20 to 25 | From 21 to 22 | From 21 to 23 | From 21 to 24 | From 21 to 25 | From 22 to 23 | From 22 to 24 | From 22 to 25 | From 23 to 24 | From 23 to 25 | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| h. | s. | s. | s | s. | s | s. | s. | s. | s. | s. | s. | s. | s. | s. | |
| 8 A. M. | —— | —— | —— | —— | —— | 3,53 | 3,33 | 3,18 | 3,13 | 3,13 | 3,00 | 3,00 | 2,87 | 2,93 | 3 |
| Noon | 3,79 | 3,55 | 3,44 | 3,31 | 3,29 | 3,31 | 3,26 | 3,16 | 3,17 | 3,21 | 3,08 | 3,12 | 2,95 | 3,08 | 3 |
| 4 P. M. | 3,88 | 3,45 | 3,42 | 3,27 | —— | 3,01 | 3,19 | 3,07 | —— | 3,38 | 3,10 | —— | 2,83 | —— | — |
| Rate in a mean solar day. | 3,83 | 3,50 | 3,43 | 3,29 | 3,29 | 3,28 | 3,26 | 3,14 | 3,15 | 3,24 | 3,06 | 3,06 | 2,88 | 3,00 | 3 |

## *Observations of Coincidences at Greenwich, April* 1824.

Height above the level of the sea 181,5 feet.

M. 20th April, Royal Observatory.
ck losing at a mean rate 3ˢ.29.

Barometer { Beginning 30.21 / Ending . 30.19 } 30.20 mean.

| Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Observed vibra. corr. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Disappearance and Re-app. | | Disappearance. | Disappearance and Re-app. |
| h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 1 29 4 | 29 8 | 29 6 | 1.18 | 1.140 | 693 | 693 | ..... | ..... | 2.125 | ..... | ..... |
| 40 37 | 40 41 | 40 39 | 1.10 | 1.060 | 693 | 693,5 | ..... | ..... | 1.838 | ..... | ..... |
| 52 10 | 52 15 | 52 12,5 | 1.02 | 0.980 | 692 | 693,5 | ..... | ..... | 1.571 | ..... | ..... |
| 2 3 42 | 3 50 | 3 46 | 0.94 | 0.905 | 695 | 695 | ..... | ..... | 1.339 | ..... | ..... |
| 15 17 | 15 25 | 15 21 | 0.87 | 0.845 | 694 | 694 | ..... | ..... | 1.168 | ..... | ..... |
| 26 51 | 26 59 | 26 55 | 0.82 | 0.790 | 696 | 696 | ..... | ..... | 1.021 | ..... | ..... |
| 38 27 | 38 35 | 38 31 | 0.76 | 0.740 | 693 | 693,5 | ..... | ..... | 0.896 | ..... | ..... |
| 50 00 | 50 9 | 50 4,5 | 0.72 | 0.695 | 697 | 697,5 | ..... | ..... | 0.790 | ..... | ..... |
| 3 1 37 | 1 47 | 1 42 | 0.67 | 0.650 | 695 | 695 | ..... | ..... | 0.691 | ..... | ..... |
| 13 12 | 13 22 | 13 17 | 0.63 | | | | | | | | |
| Mean. | | | | | 694,22 | 694,55 | 86147,81 | 86147,92 | 1.27 | 86149,08 | 86149,19 |

I. 21st April, Royal Observatory.
k losing at a mean rate 3ˢ.29.

Barometer { Beginning 30,02 / Ending . 29,98 } 30,00 mean.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 33 20 | 33 25 | 33 22,5 | 1.17 | 1.125 | 699 | 699,5 | ..... | ..... | 2.070 | ..... | ..... |
| 44 59 | 45 5 | 45 2 | 1.08 | 1.035 | 698 | 698,5 | ..... | ..... | 1.753 | ..... | ..... |
| 56 37 | 56 44 | 56 40,5 | 0.99 | 0.955 | 700 | 700,5 | ..... | ..... | 1.492 | ..... | ..... |
| 9 8 17 | 8 25 | 8 21 | 0.92 | 0.890 | 699 | 699,5 | ..... | ..... | 1.295 | ..... | ..... |
| 19 56 | 20 5 | 20 0,5 | 0.86 | 0.840 | 699 | 699,5 | ..... | ..... | 1.154 | ..... | ..... |
| 31 35 | 31 45 | 31 40 | 0.82 | 0.790 | 698 | 699 | ..... | ..... | 1.021 | ..... | ..... |
| 43 13 | 43 25 | 43 19 | 0.76 | 0.730 | 699 | 699,5 | ..... | ..... | 0.873 | ..... | ..... |
| 54 52 | 55 5 | 54 58,5 | 0.70 | 0.680 | 702 | 700 | ..... | ..... | 0.757 | ..... | ..... |
| 0 6 34 | 6 43 | 6 38,5 | 0.66 | 0.635 | 696 | 698 | ..... | ..... | 0.661 | ..... | ..... |
| 18 10 | 18 23 | 18 16,5 | 0.61 | | | | | | | | |
| Mean. | | | | | 698,89 | 699,33 | 86 49,47 | 86149,62 | 1.23 | 86150,70 | 86150,85 |

## *Observations of Coincidences at Greenwich—continued.*

Height above the level of the sea 181,5 feet.

P. M. 21st April, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29.90 / Ending .. 29.86 } = 29.88

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Observed vibra. corr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Disappearance and Re-ap. | | Disappearance. | Disap and |
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 58,5 | 1 31 17 | 31 23 | 31 20 | 1.22 | 1.180 | 692 | 691,5 | ..... | ..... | 2.278 | ..... | .. |
| | 42 49 | 42 54 | 42 51,5 | 1.14 | 1.100 | 693 | 693 | ..... | ..... | 1.978 | ..... | .. |
| | 54 22 | 54 27 | 54 24,5 | 1.06 | 1.025 | 693 | 693,5 | ..... | ..... | 1.719 | ..... | .. |
| | 2 5 55 | 6 1 | 5 58 | 0.99 | 0.955 | 692 | 694 | ..... | ..... | 1.492 | ..... | .. |
| | 17 27 | 17 37 | 17 32 | 0.92 | 0.885 | 696 | 695 | ..... | ..... | 1.281 | ..... | .. |
| | 29 3 | 29 11 | 29 7 | 0.85 | 0.825 | 694 | 694 | ..... | ..... | 1.113 | ..... | .. |
| | 40 37 | 40 45 | 40 41 | 0.80 | 0.775 | 695 | 695,5 | ..... | ..... | 0.982 | ..... | .. |
| | 52 12 | 52 21 | 52 16,5 | 0.75 | 0.725 | 693 | 694,5 | ..... | ..... | 0.860 | ..... | .. |
| | 3 3 45 | 3 57 | 3 51 | 0.70 | 0.675 | 695 | 695 | ..... | ..... | 0.746 | ..... | .. |
| 59,9 | 15 20 | 15 32 | 15 26 | 0.65 | | | | | | | | |
| 59,2 | Mean. | | | | | 693,67 | 694 | 86147,61 | 86147,73 | 1.38 | 86148,99 | 861 |

A. M. 22d April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,81 / Ending .. 29,84 } = 29,825 m

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54,5 | 8 48 32 | 48 37 | 48 34,5 | 1.20 | 1.160 | 696 | 696 | ..... | ..... | 2.200 | ..... | .. |
| | 9 00 8 | 00 13 | 00 10,5 | 1.12 | 1.080 | 696 | 697 | ..... | ..... | 1.908 | ..... | .. |
| | 11 44 | 11 51 | 11 47,5 | 1.04 | 1.005 | 698 | 698 | ..... | ..... | 1.652 | ..... | .. |
| | 23 22 | 23 29 | 23 25,5 | 0.97 | 0.940 | 698 | 696,5 | ..... | ..... | 1.446 | ..... | .. |
| | 35 00 | 35 4 | 35 2 | 0.91 | 0.875 | 696 | 698 | ..... | ..... | 1.252 | ..... | .. |
| | 46 36 | 46 44 | 46 40 | 0.84 | 0.810 | 696 | 697 | ..... | ..... | 1.073 | ..... | .. |
| | 58 12 | 58 22 | 58 17 | 0.78 | 0.755 | 696 | 696 | ..... | ..... | 0.931 | ..... | .. |
| | 10 9 48 | 9 58 | 9 53 | 0.73 | 0.705 | 697 | 697,5 | ..... | ..... | 0.812 | ..... | .. |
| | 21 25 | 21 36 | 21 20,5 | 0.68 | 0.655 | 698 | 697 | ..... | ..... | 0.702 | ..... | .. |
| 58,8 | 33 3 | 33 12 | 33 7,5 | 0.63 | | | | | | | | |
| 56,6 | Mean. | | | | | 696,78 | 697 | 86148,72 | 86148,80 | 1.33 | 86150,05 | 861 |

## *Observations of Coincidences at Greenwich—continued.*

Height above the level of the sea 181,5 feet.

P. M. 22d April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,85 / Ending...29,87 } 29,86 mean.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Disappearance and Re-ap. | Correct. for Arc. | Vibra. in 24 h. corr. for Arc. Disappearance | Vibra. in 24 h. corr. for Arc. Disappearance and Re-app. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 59,5 | 1 29 55 | 29 59 | 29 57 | 1.20 | 1.160 | 690 | 690,5 | ..... | ..... | 2.200 | ..... | .. ... |
| | 41 25 | 41 30 | 41 27,5 | 1.12 | 1.080 | 691 | 691,5 | ..... | ..... | 1.908 | ..... | ..... |
| | 52 56 | 53 2 | 52 59 | 1.04 | 1.000 | 692 | 692,5 | ..... | ..... | 1.635 | ..... | ..... |
| | 2 4 28 | 4 35 | 4 31,5 | 0.96 | 0.925 | 691 | 691,5 | ..... | ..... | 1.400 | ..... | ..... |
| | 15 59 | 16 7 | 16 3 | 0.89 | 0.860 | 692 | 692,5 | ..... | ..... | 1.210 | ..... | ..... |
| | 27 31 | 27 40 | 27 35,5 | 0.83 | 0.800 | 693 | 692,5 | ..... | ..... | 1.046 | ..... | ..... |
| | 39 4 | 39 12 | 39 8 | 0.77 | 0.745 | 693 | 694,5 | ..... | ..... | 0.908 | ..... | ..... |
| | 50 37 | 50 48 | 50 42,5 | 0.72 | 0.695 | 691 | 691,5 | ..... | ..... | 0.790 | ..... | ..... |
| | 3 2 8 | 2 20 | 2 14 | 0 67 | 0.645 | 694 | 693 | ..... | ..... | 0.681 | ..... | ..... |
| 61,0 | 13 42 | 13 52 | 13 47 | 0.62 | | | | | | | | |
| 60,2 | Mean. | | | | | 691,89 | 692,22 | 86146,97 | 86147,09 | 1.31 | 86148,28 | 86148,40 |

A. M. 23d April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,44 / Ending... 29,34 } = 29,39 mean.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 63,8 | 8 47 21 | 47 25 | 47 23 | 1.18 | 1,135 | 698 | 698 | ..... | ..... | 2.107 | ..... | ..... |
| | 58 59 | 59 3 | 59 1 | 1.09 | 1,055 | 698 | 699 | ..... | ..... | 1.820 | ..... | ..... |
| | 9 10 37 | 10 43 | 10 40 | 1.02 | 0,985 | 699 | 700 | ..... | ..... | 1.587 | ..... | ..... |
| | 22 16 | 22 24 | 22 20 | 0.95 | 0,920 | 700 | 699 | ..... | ..... | 1.384 | ..... | ..... |
| | 34 56 | 35 2 | 34 59 | 0.89 | 0,865 | 699 | 699,5 | ..... | ..... | 1.224 | ..... | ..... |
| | 46 35 | 46 42 | 46 38,5 | 0.84 | 0,810 | 699 | 700 | ..... | ..... | 1.073 | ..... | ..... |
| | 57 14 | 57 23 | 57 18,5 | 0.78 | 0,755 | 701 | 700,5 | ..... | ..... | 0.932 | ..... | ..... |
| | 10 8 55 | 9 3 | 8 59 | 0.73 | 0,710 | 700 | 700,5 | ..... | ..... | 0.824 | ..... | ..... |
| | 20 35 | 20 44 | 20 39,5 | 0.69 | 0,665 | 701 | 701 | ..... | ..... | 0.724 | ..... | ..... |
| 63,9 | 32 16 | 32 25 | 32 20,5 | 0.64 | | | | | | | | |
| 63,8 | Mean. | | | | | 699,44 | 699,72 | 86149,67 | 86149,76 | 1.30 | 86150,97 | 86151,06 |

## *Observations of Coincidences at Greenwich — continued.*

Height above the level of the sea 181,5 feet.

P. M. 23d April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,17 / Ending...29,12 } = 29,145 mean.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. in 24 h. corr. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Disappearance and Re-ap. | | Disappearance. | Disappearance and Re-app. |
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 52,5 | 1 25 29 | 25 31 | 25 30 | 1.22 | 1.180 | 698 | 699 | ..... | ..... | 2.278 | ..... | ..... |
| | 37 7 | 37 11 | 37 9 | 1.14 | 1.100 | 700 | 700 | ..... | ..... | 1.978 | ..... | ..... |
| | 48 47 | 48 51 | 48 49 | 1.06 | 1.025 | 699 | 699,5 | ..... | ..... | 1.719 | ..... | ..... |
| | 2 00 26 | 00 31 | 00 28,5 | 0.99 | 0.965 | 699 | 700,5 | ..... | ..... | 1.524 | ..... | ..... |
| | 12 5 | 12 13 | 12 9 | 0.94 | 0.910 | 700 | 700,5 | ..... | ..... | 1.354 | ..... | ..... |
| | 23 45 | 23 54 | 23 49,5 | 0.88 | 0.850 | 701 | 700,5 | ..... | ..... | 1.181 | ..... | ..... |
| | 35 26 | 35 34 | 35 30 | 0.82 | 0,790 | 702 | 703 | ..... | ..... | 1.021 | ..... | ..... |
| | 47 8 | 47 18 | 47 13 | 0.76 | 0.730 | 702 | 701,5 | ..... | ..... | 0.872 | ..... | ..... |
| | 58 50 | 58 59 | 58 54,5 | 0.70 | 0.675 | 701 | 701,5 | ..... | ..... | 0.746 | ..... | ..... |
| 53,2 | 3 10 31 | 10 41 | 10 36 | 0.65 | | | | | | | | |
| 52,8 | Mean. | | | | | 700,22 | 700,67 | 86149,94 | 86150,10 | 1.41 | 86151,35 | 86151,51 |

A. M. 24th April 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 29,86 / Ending...29,94 } = 29,90 mean.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51,5 | 8 41 56 | 42 1 | 41 58,5 | 1.16 | 1.115 | 700 | 700 | ..... | ..... | 2.033 | ..... | ..... |
| | 53 36 | 53 41 | 53 38,5 | 1.07 | 1.025 | 700 | 700 | ..... | ..... | 1.719 | ..... | ..... |
| | 9 5 16 | 5 21 | 5 18,5 | 0.98 | 0.950 | 700 | 701 | ..... | ..... | 1.476 | ..... | ..... |
| | 16 56 | 17 3 | 16 59,5 | 0.92 | 0.885 | 700 | 701 | ..... | ..... | 1.281 | ..... | ..... |
| | 28 36 | 28 45 | 28 40,5 | 0.85 | 0.820 | 701 | 700,5 | ..... | ..... | 1.100 | ..... | ..... |
| | 40 17 | 40 25 | 40 21 | 0.79 | 0.765 | 700 | 701 | ..... | ..... | 0.956 | ..... | ..... |
| | 51 57 | 52 7 | 52 2 | 0.74 | 0.715 | 701 | 700,5 | ..... | ..... | 0.835 | ..... | ..... |
| | 10 3 38 | 3 47 | 3 42,5 | 0.69 | 0.665 | 701 | 701,5 | ..... | ..... | 0.724 | ..... | ..... |
| | 15 19 | 15 29 | 15 24 | 0.64 | 0.620 | 699 | 700,5 | ..... | ..... | 0.629 | ..... | ..... |
| 54,5 | 26 58 | 27 11 | 27 4,5 | 0.60 | | | | | | | | |
| 53,0 | Mean. | | | | | 700,22 | 700,67 | 86149,94 | 86150,10 | 1.19 | 86151,13 | 86151,29 |

## *Observations of Coincidences at Greenwich—continued.*

Height above the level of the sea 181,5 feet.

P.M. 24th April, 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 30.00 / Ending .. 30.03 } 30.015 mean.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. in 24 h. corr. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Disappearance and Re-app. | | Disappearance. | Disappearance and Re-app. |
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 55,9 | 1 45 17 | 45 21 | 45 19 | 1.18 | 1.135 | 694 | 695 | ..... | ..... | 2.107 | ..... | ..... |
| | 56 51 | 56 57 | 56 54 | 1.09 | 1.055 | 696 | 696 | ..... | ..... | 1.820 | ..... | ..... |
| | 2 8 27 | 8 33 | 8 30 | 1.02 | 0.985 | 694 | 694,5 | ..... | ..... | 1.587 | ..... | ..... |
| | 20 1 | 20 8 | 20 4,5 | 0.95 | 0.910 | 695 | 696 | ..... | ..... | 1.354 | ..... | ..... |
| | 31 36 | 31 45 | 31 40,5 | 0.87 | 0.845 | 697 | 696 | ..... | ..... | 1.168 | ..... | ..... |
| | 43 13 | 43 20 | 43 16,5 | 0.82 | 0.795 | 695 | 696 | ..... | ..... | 1.034 | ..... | ..... |
| | 54 48 | 54 57 | 54 52,5 | 0.77 | 0.745 | 695 | 696 | ..... | ..... | 0.908 | ..... | ..... |
| | 3 6 23 | 6 34 | 6 28,5 | 0.72 | 0.690 | 698 | 697,5 | ..... | ..... | 0.779 | ..... | ..... |
| | 18 1 | 18 11 | 18 6 | 0.66 | 0.640 | 695 | 696 | ..... | ..... | 0.671 | ..... | ..... |
| 58,0 | 29 36 | 29 48 | 29 42 | 0.62 | | | | | | | | |
| 56,9 | Mean. | | | | | 695,44 | 695,89 | 86148,24 | 86148,41 | 1.27 | 86149,51 | 86149,68 |

A.M. 25th April, 1824, Royal Observatory.
Clock losing at a mean rate 3ˢ.29.

Barometer { Beginning 30.05 / Ending... 30.045 } =30.047 mean.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51,5 | 8 52 27 | 52 31 | 52 29 | 1.16 | 1.115 | 701 | 701,5 | ..... | ..... | 2.033 | ..... | ..... |
| | 9 4 8 | 4 13 | 4 10,5 | 1.07 | 1.030 | 701 | 701 | ..... | ..... | 1.735 | ..... | ..... |
| | 15 49 | 15 54 | 15 51,5 | 0.99 | 0.955 | 701 | 702 | ..... | ..... | 1.492 | ..... | ..... |
| | 27 30 | 27 37 | 27 33,5 | 0.92 | 0.885 | 702 | 702 | ..... | ..... | 1.281 | ..... | ..... |
| | 39 12 | 39 19 | 39 15,5 | 0.85 | 0.825 | 701 | 701,5 | ..... | ..... | 1.113 | ..... | ..... |
| | 50 53 | 51 1 | 50 57 | 0.80 | 0.775 | 702 | 702 | ..... | ..... | 0.982 | ..... | ..... |
| | 10 2 35 | 2 43 | 2 39 | 0.75 | 0.725 | 700 | 701 | ..... | ..... | 0.860 | ..... | ..... |
| | 14 15 | 14 25 | 14 20 | 0.70 | 0.675 | 702 | 701 | ..... | ..... | 0.746 | ..... | ..... |
| | 25 57 | 26 5 | 26 1 | 0.65 | 0.635 | 701 | 702 | ..... | ..... | 0.661 | ..... | ..... |
| 54,8 | 37 38 | 37 48 | 37 43 | 0.62 | | | | | | | | |
| 53,1 | Mean. | | | | | 701,22 | 701,56 | 86150,29 | 86150,41 | 1.21 | 86151,50 | 86151,62 |

## Vibrations of the Pendulum at the Royal Observatory at Greenwich.

The Clock making 86396,71 vibrations at a mean rate in a mean solar day, April 1824.

| Date. | Barom. | Therm. | Diff. between Temp. Pend. and 50°. | Vibrations of Pendulum in 24 h. corrected for Arc by | | Corrections for Temperature. | Vibrations in 24 hours at temperature of 50°. | |
|---|---|---|---|---|---|---|---|---|
| | | | | Disappearance. | Mean of Disap. and Re-app. | | Disappearance. | Mean of Disap. and Re-ap. |
| | Inches. | ° | ° | | | vib. | | |
| 20th P. M. | 30,20 | 59,0 | 9,0 | 86149,08 | 86149,19 | + 3,81 | 86152,89 | 86153,00 |
| 21st A. M. | 30,00 | 55,6 | 5,6 | 86150,70 | 86150,85 | + 2,37 | 86153,07 | 86153,22 |
| P. M. | 29,88 | 59,2 | 9,2 | 86148,99 | 86149,11 | + 3,89 | 86152,88 | 86153,00 |
| 22d A. M. | 29,82 | 56,6 | 6,6 | 86150,05 | 86150,13 | + 2,79 | 86152,84 | 86152,92 |
| P. M. | 29,86 | 60,2 | 10,2 | 86148,28 | 86148,40 | + 4,31 | 86152,59 | 86152,71 |
| 23d A. M. | 29,39 | 53,8 | 3,8 | 86150,97 | 86151,06 | + 1,61 | 86152,58 | 86152,67 |
| P. M. | 29,14 | 52,8 | 2,8 | 86151,35 | 86151,51 | + 1,18 | 86152,53 | 86152,69 |
| 24th A. M. | 29,90 | 53,0 | 3,0 | 86151,13 | 86151,29 | + 1,27 | 86152,40 | 86152,56 |
| P. M. | 30,01 | 56,9 | 6,9 | 86149,51 | 86149,68 | + 2,29 | 86152,43 | 86152,60 |
| 25th A. M. | 30,05 | 53,1 | 3,1 | 86151,50 | 86151,62 | + 1,31 | 86152,81 | 86152,93 |
| Mean . . | 29,82 | 56,0 | | | | | 86152,70 | 86152,83 |

## Results.

| 1824. | Correct Number of Vibrations made by the Pendulum in a mean solar day, by | |
|---|---|---|
| | Disappearance. | Mean of Disap. and Re-ap. |
| From 20th April P. M. to 21st A. M. | 86152,44 | 86152,57 |
| 22d | 86152,71 | 86152,82 |
| 23d | 86152,67 | 86152,78 |
| 24th | 86152,72 | 86152,85 |
| 25th | 86152,70 | 86152,83 |
| — 21st — P. M. to 22d A. M. | 86152,87 | 86152,97 |
| 23d | 86152,75 | 86152,85 |
| 24th | 86152,79 | 86152,91 |
| 25th | 86152,77 | 86152,90 |
| — 22d — P. M. to 23d A. M. | 86152,63 | 86152,74 |
| 24th | 86152,75 | 86152,89 |
| 25th | 86152,79 | 86152,92 |
| — 23d — P. M. to 24th A. M. | 86152,87 | 86153,03 |
| 25th | 86152,83 | 86152,98 |
| — 24th — P. M. to 25th A. M. | 86152,81 | 86152,95 |
| Mean . . . . . | 86152,74 | 86152,87 |
| Barom. 29,82, Ther. 56,0°, Buoyancy | = + 6,06 | + 6,06 |
| Elevation 181,5 feet, Correction $= 0{,}75 \times \frac{6}{10}$ . . . | = + 0,45 | + 0,45 |
| No. of vibra. at Greenwich in vacuo at the level of the sea, temp. 50° of Fah. | 86159,25 | 86159,38 |

The above correction for buoyancy of the atmosphere, has been deduced from the mean height of the barometer 29,82, and temperature 56°,0, together with the specific gravity of the pendulum supposed to be 8,61. That for elevation, by the duplicate ratio of distances from the earth's centre (3954,583 miles) the ball of the pendulum at Greenwich being $181\frac{1}{2}$ feet above the level of the sea. This was deduced from the Account of the Trigonometrical Survey of Great

Britain ; from which it appears that the height of the theodolite above the level of the sea was - 214 feet.

| | | |
|---|---|---|
| Theodolite above the floor of the transit room | = | 38 |
| Floor of transit room above the level of the sea | = | 176 |
| Ball of pendulum above floor of transit room | = | $5\frac{1}{2}$ |
| Ball of pendulum above the level of the sea - | = | $181\frac{1}{2}$ |

From the nature of the eminence, however, on which the pendulum stood, I have taken $\frac{6}{10}$ of the correction so obtained, as the proper correction due to this elevation.

## June, 1825.

### *Experiment* II. *at Port Bowen in Prince Regent's Inlet.*

Comparison of Chronometer I. with Clock at Port Bowen—(1st Series.)

| Date. | Chronometer. | Clock. | Difference. |
|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. |
| June 14th, P. M. | 10 42 8,5 | 8 14 00 | 2 28 8,5 |
| —— | 10 53 8 | 8 25 00 | 2 28 8 |
| —— | 3 6 56 | 12 39 00 | 2 27 56 |
| —— | 3 16 55,5 | 12 49 00 | 2 27 55,5 |
| Noon, 15th . | 2 2 25 | 11 35 00 | 2 27 25 |
| —— | 2 23 24 | 11 56 00 | 2 27 24 |
| P. M. 16th . . | 10 56 51,5 | 8 31 00 | 2 25 51,5 |
| —— | 11 6 51 | 8 41 00 | 2 25 51 |
| Noon, 17th . | 1 4 8,5 | 11 39 00 | 2 25 8,5 |
| —— | 2 26 7,5 | 12 1 00 | 2 25 7,5 |
| Noon, 18th . | 2 2 1 | 11 38 00 | 2 24 1 |
| —— | 2 23 59 | 11 59 00 | 2 23 59 |
| P M. . . | 10 27 37,5 | 8 4 00 | 2 23 37,5 |
| —— | 10 37 37,0 | 8 14 00 | 2 23 37 |
| —— | 2 42 25,5 | 12 19 00 | 2 23 25,5 |
| —— | 3 4 24,5 | 12 41 00 | 2 23 24,5 |
| Noon, 19th . | 2 11 53 | 11 49 00 | 2 22 53 |
| —— | 2 22 52,5 | 12 00 00 | 2 22 52,5 |
| P. M. . . . | 10 26 30 | 8 4 00 | 2 22 30 |
| —— | 10 36 29,5 | 8 14 00 | 2 22 29,5 |
| —— | 2 32 18,5 | 12 10 00 | 2 22 18,5 |
| —— | 3 4 17 | 12 42 00 | 2 22 17 |
| Noon, 20th . | 2 4 46 | 11 43 00 | 2 21 46 |
| —— | 2 26 45 | 12 5 00 | 2 21 45 |
| P. M. . . . | 10 17 23 | 7 56 00 | 2 21 23 |
| —— | 10 38 22 | 8 17 00 | 2 21 22 |
| —— | 2 43 10,5 | 12 22 00 | 2 21 10,5 |
| —— | 2 53 10 | 12 32 00 | 2 21 10 |
| Noon, 21st . . | 1 56 39 | 11 36 00 | 2 20 39 |
| —— | 2 28 37,5 | 12 8 00 | 2 20 37,5 |
| Noon, 22d . . | 2 6 31 | 11 47 00 | 2 19 31 |
| —— | 2 27 30 | 12 8 00 | 2 19 30 |
| P. M. . . . | 10 13 8 | 7 54 00 | 2 19 8 |
| —— | 10 23 7,5 | 8 4 00 | 2 19 7,5 |
| —— | 2 37 55,5 | 12 19 00 | 2 18 55,5 |
| —— | 2 48 55 | 12 30 00 | 2 18 55 |
| Noon, 23d . . | 2 4 23 | 11 46 00 | 2 18 23 |
| —— | 2 25 22 | 12 7 00 | 2 18 22 |
| P. M. . . . | 10 11 00 | 7 53 30 | 2 18 00 |
| —— | 10 21 59,5 | 8 4 00 | 2 17 59,5 |
| —— | 2 46 47 | 12 29 00 | 2 17 47 |
| —— | 2 57 46,5 | 12 40 00 | 2 17 46,5 |

## *Transits observed at Port Bowen, June* 1825—(1*st Series.*)

| Date. | Stars. | 1st Wire observed. | 1st Wire corrected. | 2nd. | 3rd Wire meridian. | 4th. | 5th. | Mean Chron. | Comparison of Chron. and Clock. | Mean Clock. | Clock at mean Noon. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | h. m. s. | m. s. | m. s. | h. m. s. | m. s. | m. s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. |
| June 14th | Arcturus . . | ..... | .... | ..... | 10 50 27,5 | 50 55 | 51 22,5 | ..... | 2 28 8,12 | 8 22 19,38 | (3rd wire.). |
| P. M. | α Lyræ . . . | 3 11 58,5 | 11 59,4 | 12 32,5 | 3 13 5 | 13 37,75 | 14 10,5 | 3 13 5,02 | 2 27 55,69 | 12 45 9,33 | |
| | ⊙'s 1st Limb | 2 13 1,5 | ..... | 13 31 | 2 13 58,5 | 14 26,5 | 14 54,5 | | | | |
| 15th | ⊙'s 2nd Limb | 2 15 19 | ..... | 15 48 | 2 16 16 | 16 44 | 17 12 | | | | |
| | ⊙'s Centre . | 2 14 10,25 | 14 11,01 | 14 39,5 | 2 15 7,25 | 15 35,25 | 16 3,25 | 2 15 7,25 | 2 27 24,4 | 11 47 42,85 | 11 47 41,29 |
| 16th, P. M. | Arcturus . . | ..... | ..... | 42 11,5 | 10 42 39 | ..... | ..... | ..... | 2 25 52,21 | 8 16 46,79 | (3rd wire.) |
| | ⊙'s 1st Limb | 2 13 30 | ..... | 13 59 | 2 14 27 | 14 55,5 | 15 23 | | | | |
| 17th | ⊙'s 2nd Limb | 2 15 47,9 | ..... | 16 17,2 | 2 16 45 | 17 13,5 | 17 41,5 | | | | |
| | ⊙'s Centre . | 2 14 38,95 | 14 39,71 | 15 8,1 | 2 15 36 | 16 4,5 | 16 32,25 | 2 15 36,09 | 2 25 8,0 | 11 50 28,09 | 11 50 0,78 |
| | ⊙'s 1st Limb | 2 13 45 | ..... | 14 14 | 2 14 42,25 | 15 10 | 15 37,2 | | | | |
| 18th | ⊙'s 2nd Limb | 2 16 2 | ..... | 16 31 | 2 16 59,25 | 17 27,5 | 17 56 | | | | |
| | ⊙'s Centre . | 2 14 53,5 | 14 54,26 | 15 22,5 | 2 15 50,75 | 16 18,75 | 16 46,6 | 2 15 50,59 | 2 23 59,74 | 11 51 50,85 | 11 51 10,52 |
| P. M. | Arcturus . . | ..... | ..... | ..... | ..... | ..... | 10 35,46 | ..... | 2 23 37,07 | 8 12 8,93 | (5th wire.) |
| —— | α Lyræ . . . | 2 56 22 | 56 22,9 | 56 56 | 2 57 28,8 | 58 2 | 58 34,5 | 2 57 28,83 | 2 23 24,81 | 12 34 4,02 | |
| | ⊙'s 1st Limb | 2 14 00 | ..... | 14 29 | 2 14 57,5 | 15 26 | 15 53,5 | | | | |
| 19th | ⊙'s 2nd Limb | 2 16 18 | ..... | 16 47 | 2 17 15 | 17 43,5 | 18 12,2 | | | | |
| | ⊙'s Centre . | 2 15 9 | 15 9,76 | 15 38 | 2 16 6,25 | 16 34,75 | 17 2,85 | 2 16 6,31 | 2 22 52,81 | 11 53 13,50 | 11 52 20,07 |
| P. M. | Arcturus . . | 10 30 2 | 30 2,74 | 30 30 | 10 30 57 | 31 25 | 31 52 | 10 30 57,29 | 2 22 29,78 | 8 8 27,51 | |
| —— | α Lyræ . . . | 2 52 28,5 | 52 29,4 | 53 2,5 | 2 53 35,25 | 54 8 | 54 41 | 2 53 35,23 | 2 22 17,5 | 12 31 17,73 | |
| 20th, P. M. | Arcturus . . | 10 26 9 | 26 9,74 | 26 37 | 10 27 4 | 27 31,5 | 27 59 | 10 27 4,21 | 2 21 22,54 | 8 5 41,67 | |
| —— | α Lyræ . . . | 2 48 35 | 48 35,9 | 49 9 | 2 49 41,5 | 50 14,5 | 50 47,5 | 2 49 41,65 | 2 21 10,33 | 12 28 31,32 | |
| | ⊙'s 1st Limb | 2 14 31 | ..... | 15 0,5 | 2 15 28 | 15 56,5 | 16 24,2 | | | | |
| 21st | ⊙'s 2nd Limb | 2 16 50 | ..... | 17 18,5 | 2 17 46,5 | 18 15 | 18 43 | | | | |
| | ⊙'s Centre . | 2 15 40,5 | 15 41,26 | 16 9,5 | 2 16 37,25 | 17 5,75 | 17 33,6 | 2 16 37,43 | 2 20 38,06 | 11 55 59,37 | 11 54 39,86 |
| | ⊙'s 1st Limb | 2 14 46 | ..... | 15 15,8 | 2 15 43,5 | 16 11,8 | 16 39,5 | | | | |
| 22nd | ⊙'s 2nd Limb | 2 17 4,5 | ..... | 17 33,5 | 2 18 1 | 18 29,7 | 18 58 | | | | |
| | ⊙'s Centre . | 2 15 55,25 | 15 56,01 | 16 24,65 | 2 16 52,25 | 17 20,75 | 17 48,75 | 2 15 52,44 | 2 19 30,51 | 11 57 21,93 | 11 55 49,45 |
| P. M. | Arcturus . . | 10 18 21,5 | 18 22,24 | 18 50 | 10 19 17,25 | 19 44,5 | 20 12 | 10 19 17,21 | 2 19 7,69 | 8 0 9,52 | |
| —— | α Lyræ . . . | 2 40 47,5 | 40 48,4 | 41 21,5 | 2 41 54,5 | 42 27,5 | 43 0,5 | 2 41 54,48 | 2 18 55,32 | 12 22 59,16 | |
| | ⊙'s 1st Limb | 2 15 1 | ..... | 15 30,5 | 2 15 58,5 | 16 26,5 | 16 54,5 | | | | |
| 23rd | ⊙'s 2nd Limb | 2 17 19,5 | ..... | 17 48,5 | 2 18 16,5 | 18 44,5 | 19 12,7 | | | | |
| | ⊙'s Centre . | 2 16 10,25 | 16 11,01 | 16 39,5 | 2 17 7,5 | 17 35,5 | 18 3,6 | 2 17 7,43 | 2 18 22,39 | 11 58 45,04 | 11 56 59,66 |
| P. M. | Arcturus . . | 10 14 28 | 14 28,74 | 14 56 | 10 15 23,5 | 15 51 | 16 18 | 10 15 23,46 | 2 17 59,8 | 7 57 23,66 | |
| —— | α Lyræ . . . | 2 36 54 | 36 54,9 | 37 28 | 2 38 0,5 | 38 33,5 | 39 6,5 | 2 38 0,65 | 2 17 47,4 | 22 20 13,25 | |

## *Observation of Coincidences at Port Bowen, June* 1825 (*1st Series.*)

Night, June 14th, 1825, Port Bowen. Hygr. { Temp. 50°.5. / Dew P. 36°. } Barr. { Begg. 29.850 temp. of mer. 45° / Endg. 29.850 —— 45° } = 29.918 mean cor. to temp. pend.
Clock gaining at a mean rate 69s.88.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 50,5 | 9 46 26 | 46 30 | 46 28 | 1.17 | 1.125 | 693 | 696 | 86220,328 | 86221,403 | 2.069 | 86222,397 | 86223,472 |
| | 57 59 | 58 9 | 58 4 | 1.08 | 1.040 | 694 | 695 | 86220,687 | 86221,046 | 1.768 | 86222,455 | 86222,814 |
| | 10 9 33 | 9 45 | 9 39 | 1.00 | 0.960 | 704 | 701 | 86224,227 | 86223,176 | 1.507 | 86225,734 | 86224,683 |
| | 21 17 | 21 23 | 21 20 | 0.92 | 0.890 | 698 | 699 | 86222,116 | 86222,470 | 1.295 | 86223,411 | 86223,765 |
| | 32 55 | 33 3 | 32 59 | 0.86 | 0 830 | 698 | 698,5 | 86222,116 | 86222,293 | 1.122 | 86223,238 | 86223,415 |
| 51 | 44 33 | 44 42 | 44 37,5 | 0.80 | 0.770 | 699 | 699 | 86222,470 | 86222,470 | 0.969 | 86223,439 | 86223,439 |
| | 56 12 | 56 21 | 56 16,5 | 0.74 | 0,715 | 698 | 699 | 86222,116 | 86222,470 | 0.836 | 86222,952 | 86223,306 |
| | 11 7 50 | 8 1 | 7 55,5 | 0.69 | 0.670 | 698 | 699 | 86222,116 | 86222,470 | 0.734 | 86222,850 | 86223,204 |
| | 19 28 | 19 41 | 19 34,5 | 0.65 | 0.620 | 699 | 699,5 | 86222,470 | 86222,647 | 0.628 | 86223,098 | 86223,275 |
| 51 | 31 7 | 31 21 | 31 14 | 0.59 | | | | | | | | |
| 50,83 | Mean. | | | | | | | | | | 86223,286 | 86223,486 |
| | | | | | | | | | Correction for Temp. 0°.83. | | + 0,351 | + 0,351 |
| 0,83 | Diff. to 50°. | | | | | | | | Vibra.. in 24 h. at Temp. 50°. | | 86223,637 | 86223,837 |

Morning, June 15th, 1825, Port Bowen. Hygr. { Temp. 49°,0. / Dew Pt. 35°. } Barr. { Begg. 29,850 mer. 45° / Endg. 29,859 — 41° } = 29,922 mean cor. to temp. of pend.
Clock gaining at a mean rate 69s.88.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50,5 | 1 40 54 | 40 58 | 40 56 | 1.15 | 1.110 | 696 | 697 | 86221,403 | 86221,760 | 2.014 | 86223,417 | 86223,774 |
| | 52 30 | 52 36 | 52 33 | 1.07 | 1.025 | 698 | 698 | 86222,116 | 86222,116 | 1.718 | 86223,834 | 86223,834 |
| | 2 4 8 | 4 14 | 4 11 | 0.98 | 0.950 | 698 | 698,5 | 86222,116 | 86222,293 | 1.476 | 86223,592 | 86223,769 |
| | 15 46 | 15 53 | 15 49,5 | 0.92 | 0.890 | 701 | 701,5 | 86223,176 | 86223,352 | 1.295 | 86224,471 | 86224,647 |
| | 27 27 | 27 35 | 27 31 | 0.86 | 0.830 | 700 | 700,5 | 86222,823 | 86223,000 | 1.122 | 86223,945 | 86224,122 |
| 49,1 | 39 7 | 39 16 | 39 11,5 | 0.80 | 0.775 | 700 | 701 | 86222,823 | 86223,176 | 0.982 | 86223,805 | 86224,158 |
| | 50 47 | 50 58 | 50 52,5 | 0.75 | 0.725 | 700 | 701,5 | 86222,823 | 86223,352 | 0.859 | 86223,682 | 86224,211 |
| | 3 2 27 | 2 41 | 2 34 | 0.70 | 0.675 | 707 | 705,5 | 86225,269 | 86224,750 | 0.745 | 86226,014 | 86225,495 |
| | 14 14 | 14 25 | 14 19,5 | 0.65 | 0.625 | 704 | 704 | 86224,227 | 86224,227 | 0.638 | 86224,865 | 86224,865 |
| 47 | 25 58 | 26 9 | 26 3,5 | 0.60 | | | | | | | | |
| 8,87 | Mean. | | | | | | | | | | 86224,181 | 86224,319 |
| | | | | | | | | | Correction for Temp. 1°.13. | | — 0,479 | — 0,479 |
| 1,13 | Diff. to 50°. | | | | | | | | Vibra. in 24 h at Temp. 50°. | | 86223,702 | 86223,840 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Forenoon, 15th June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 49°. / Dew Pt. 32°. } Barr. { Begg. 29.846 mer. 43°.5. / Endg. 29.832 — 45° . } = 29.906 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 49 | 9 7 41 | 7 45 | 7 43 | 1.20 | 1.160 | 698 | 698,5 | 86222,116 | 86222,293 | 2.200 | 86224,316 | 86224,493 |
| | 19 19 | 19 24 | 19 21,5 | 1.12 | 1.075 | 700 | 700 | 86222,823 | 86222,823 | 1.889 | 86224,712 | 86224,712 |
| | 30 59 | 31 4 | 31 1,5 | 1.03 | 0.995 | 699 | 700 | 86222,470 | 86222,823 | 1.618 | 86224,088 | 86224,441 |
| | 42 38 | 42 45 | 42 41,5 | 0.96 | 0.925 | 701 | 700,5 | 86223,176 | 86223,000 | 1.399 | 86224,575 | 86224,399 |
| 49 | 54 19 | 54 25 | 54 22 | 0.89 | 0.860 | 700 | 701 | 86222,823 | 86223,176 | 1.209 | 86224,032 | 86224,385 |
| | 10 5 59 | 6 7 | 6 3 | 0.83 | 0.800 | 701 | 701 | 86223,176 | 86223,176 | 1.046 | 86224,222 | 86224,222 |
| 49 | 17 40 | 17 48 | 17 44 | 0.77 | 0.745 | 702 | 702,5 | 86223,527 | 86223,703 | 0.907 | 86224,434 | 86224,610 |
| | 29 22 | 29 31 | 29 26,5 | 0.72 | 0.700 | 701 | 701,5 | 86223,176 | 86223,352 | 0.801 | 86223,977 | 86224,153 |
| | 41 3 | 41 13 | 41 8 | 0.68 | 0.660 | 702 | 702 | 86223,527 | 86223,527 | 0.712 | 86224,239 | 86224,239 |
| 49,2 | 52 45 | 52 55 | 52 50 | 0.64 | | | | | | | | |
| 49,05 | Mean. | | | | | | | | | | 86224,288 | 86224,406 |
| 0,95 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.95. | | | — 0,402 | —,402 |
| | | | | | | | | Vibrations in 24 h. at Temp. 50°. | | | 86223,886 | 86224,004 |

Afternoon, 15th June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 49°. / Dew Pt. 30°. } Barr. { Begg. 29.799 mer. 44½°. / Endg. 29.789 — 43½°. } = 29.857 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 47 | 1 20 33 | 20 38 | 20 35,5 | 1.12 | 1.080 | 701 | 701 | 86223,176 | 86223,176 | 1.907 | 86225,083 | 86225,083 |
| | 32 14 | 32 19 | 32 16,5 | 1.04 | 1.005 | 702 | 702,5 | 86223,527 | 86223,703 | 1.650 | 86225,177 | 86225,353 |
| | 43 56 | 44 2 | 43 59 | 0.97 | 0.935 | 703 | 703,5 | 86223,878 | 86224,053 | 1.429 | 86225,307 | 86225,482 |
| | 55 39 | 55 46 | 55 42,5 | 0.90 | 0.870 | 703 | 702 | 86223,878 | 86223,527 | 1.237 | 86225,115 | 86224,764 |
| 46,5 | 2 7 22 | 7 27 | 7 24,5 | 0.84 | 0.810 | 702 | 703 | 86223,527 | 86223,878 | 1,073 | 86224,600 | 86224,951 |
| | 19 4 | 19 11 | 19 7,5 | 0.78 | 0.750 | 704 | 704 | 86224,227 | 86224,227 | 0.920 | 86225,147 | 86225,147 |
| | 30 48 | 30 55 | 30 51,5 | 0.72 | 0.690 | 704 | 705 | 86224,227 | 86224,576 | 0.776 | 86225,003 | 86225,352 |
| | 42 32 | 42 41 | 42 36,5 | 0.66 | 0.640 | 704 | 704 | 86224,227 | 86224,227 | 0.670 | 86224,897 | 86224,897 |
| | 54 16 | 54 25 | 54 20,5 | 0.62 | 0.595 | 706 | 706 | 86224,923 | 86224,923 | 0.579 | 86225,502 | 86225,502 |
| 46 | 3 6 2 | 6 11 | 6 6,5 | 0.57 | | | | | | | | |
| 46,5 | Mean. | | | | | | | | | | 86225,092 | 86225,170 |
| 3,5 | Diff. to 50°. | | | | | | | Correction for Temp. 3°.5. | | | — 1,480 | — 1,480 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,612 | 86223,690 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Night, 15th June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. {Temp. 44°. Dew Pt. 31°. Barr. {Begg. 29.772 mer. 42°.5. Endg. 29.771 — 44°. } = 29.835 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-ap. pearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 44 | 9 1 23 | 1 27 | 1 25 | 1.16 | | | | | | | | |
| 44 | 13 6 | 13 11 | 13 8,5 | 1.06 | 1.110 | 703 | 703,5 | 86223,878 | 86224,053 | 2.014 | 86225,892 | 86226,067 |
| 44 | 24 49 | 24 55 | 24 52 | 0.99 | 1.025 | 703 | 703,5 | 86223,878 | 86224,053 | 1.718 | 86225,596 | 86225,771 |
| 44 | 36 33 | 36 41 | 36 37 | 0.92 | 0.955 | 704 | 705 | 86224,227 | 86224,576 | 1.491 | 86225,718 | 86226,067 |
| 44 | 48 18 | 48 25 | 48 21,5 | 0.85 | 0.885 | 705 | 704,5 | 86224,576 | 86224,402 | 1.280 | 86225,856 | 86225,682 |
| 46 | 10 00 1 | 00 11 | 00 6 | 0.79 | 0.820 | 703 | 704,5 | 86223,878 | 86224,402 | 1.099 | 86224,977 | 86225,501 |
| 48 | 11 45 | 11 55 | 11 50 | 0.73 | 0.760 | 704 | 704 | 86224,227 | 86224,227 | 0.944 | 86225,171 | 86225,171 |
| 50 | 23 28 | 23 39 | 23 33,5 | 0.68 | 0.705 | 703 | 703,5 | 86223,878 | 86224,053 | 0.812 | 86224,690 | 86224,865 |
| 50,5 | 35 10 | 35 22 | 35 16 | 0.64 | 0.660 | 702 | 702,5 | 86223,527 | 86223,703 | 0.712 | 86224,239 | 86224,415 |
| 50,8 | 46 51 | 47 4 | 46 57,5 | 0.60 | 0.620 | 701 | 701,5 | 86223,176 | 86223,352 | 0.628 | 86223,804 | 86223,980 |
| 46,53 | Mean. | | | | | | | | | | 86225,105 | 86225,280 |
| 3,47 | Diff. to 50°. | | | | | | | Correction for Temp. 3°.47. | | | — 1,468 | — 1,468 |
| | | | | | | | | Vibrations in 24 h. at Temp. 50°. | | | 86223,637 | 86223,812 |

Morning, 16th June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. {Temp. 49°. Dew Pt. 30°. Barr. {Begg. 29.781 mer. 45° Endg. 29.761 — 43° } = 29.836 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 12 57 4 | 57 8 | 57 6 | 1.17 | | | | | | | | |
| | 1 8 43 | 8 48 | 8 45,5 | 1.08 | 1.125 | 699 | 699,5 | 86222,470 | 86222,647 | 2.069 | 86224,539 | 86224,716 |
| | 20 22 | 20 28 | 20 25 | 1.00 | 1.040 | 699 | 699,5 | 86222,470 | 86222,647 | 1.768 | 86224,238 | 86224,415 |
| | 32 2 | 32 9 | 32 5,5 | 0.93 | 0.965 | 700 | 700,5 | 86222,823 | 86223,000 | 1.522 | 86224,345 | 86224,522 |
| 48,2 | 43 42 | 43 50 | 43 46 | 0.86 | 0.895 | 700 | 700,5 | 86222,823 | 86223,000 | 1.309 | 86224,132 | 86224,309 |
| | 55 22 | 55 33 | 55 27,5 | 0.80 | 0.830 | 700 | 701,5 | 86222,823 | 86223,352 | 1.122 | 86223,945 | 86224,474 |
| 47 | 2 7 6 | 7 15 | 7 10,5 | 0.75 | 0 775 | 704 | 703 | 86224,227 | 86223,878 | 0.982 | 86225,209 | 86224,860 |
| | 18 46 | 18 57 | 18 51,5 | 0.70 | 0.725 | 700 | 701 | 86222,823 | 86223,176 | 0.860 | 86223,683 | 86224,036 |
| | 30 28 | 30 39 | 30 33,5 | 0.65 | 0.675 | 702 | 702 | 86223,527 | 86223,527 | 0.745 | 86224,272 | 86224,272 |
| 47 | 43 12 | 43 22 | 43 17 | 0.61 | 0.630 | 704 | 703,5 | 86224,227 | 86224,053 | 0.649 | 86224,876 | 86224,702 |
| 47,8 | Mean. | | | | | | | | | | 86224,360 | 86224,478 |
| 2,2 | Diff. to 50°. | | | | | | | Correction for Temp. 2°.2. | | | — 0,930 | — 0,930 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,430 | 86223,548 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Forenoon, 16th June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 47°. / Dew Pt. 38°. } Barr. { Begs. 29.769 mer. 43° / Ends. 29.781 — 45° } = 29.843 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds by Clock. Disap. | Interval in seconds by Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance | Vibra. in 24 h. cor. for Arc. Mean of Disap and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 47,2 | 9 2 57 | 3 00 | 2 58,5 | 1.17 | 1.125 | 700 | 701 | 86222,823 | 86223,176 | 2.069 | 86224,892 | 86225,245 |
| 49,8 | 14 37 | 14 42 | 14 39,5 | 1.08 | 1.040 | 702 | 702,5 | 86223,527 | 86223,703 | 1.768 | 86225,295 | 86225,471 |
| 49,8 | 26 19 | 26 25 | 26 22 | 1.00 | 0.965 | 702 | 702,5 | 86223,527 | 86223,703 | 1.522 | 86225,049 | 86225,225 |
| | 38 01 | 38 8 | 38 4,5 | 0.93 | 0.900 | 703 | 703 | 86223,878 | 86223,878 | 1.324 | 86225,202 | 86225,202 |
| | 49 44 | 49 51 | 49 47,5 | 0.87 | 0.840 | 702 | 703 | 86223,527 | 86223,878 | 1.154 | 86224,681 | 86225,032 |
| 49,8 | 10 1 26 | 1 35 | 1 30,5 | 0.81 | 0.785 | 704 | 734 | 86224,227 | 86224,227 | 1.007 | 86225,234 | 86225,234 |
| | 13 10 | 13 19 | 13 14,5 | 0.76 | 0.735 | 702 | 702 | 86223,527 | 86223,527 | 0.883 | 86224,410 | 86224,410 |
| | 24 52 | 25 1 | 25 56,5 | 0.71 | 0.685 | 703 | 702,5 | 86223,878 | 86223,703 | 0.766 | 86224,644 | 86224,469 |
| | 36 35 | 36 43 | 36 39 | 0.66 | 0.640 | 702 | 702,5 | 86223,527 | 86223,703 | 0.670 | 86224,197 | 86224,373 |
| 49,8 | 48 17 | 48 26 | 48 41,5 | 0.62 | | | | | | | | |
| 49,28 | Mean. | | | | | | | | | | 86224,845 | 86224,962 |
| 0,72 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.72. | | | —0,304 | —0,304 |
| | | | | | | | | Vibrations in 24 h. at Temp. 50°. | | | 86224,541 | 86224,658 |

Afternoon, 16th June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 50°. / Dew Pt. 38°. } Barr. { Begs. 29.800 mer. 46° / Ends. 29.807 — 46°. } = 29.868 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49,8 | 1 29 27 | 29 30 | 29 28,5 | 1.19 | 1.145 | 698 | 698,5 | 86222,116 | 86222,293 | 2.143 | 86224,259 | 86224,436 |
| | 41 5 | 41 9 | 41 7 | 1.10 | 1.060 | 698 | 698 | 86222,116 | 86222,116 | 1.837 | 86223,953 | 86223,953 |
| | 52 43 | 52 47 | 52 45 | 1.02 | 0.980 | 698 | 698,5 | 86222,116 | 86222,293 | 1.570 | 86223,686 | 86223,863 |
| 50,3 | 2 4 21 | 4 26 | 4 23,5 | 0.94 | 0.910 | 698 | 698,5 | 86222,116 | 86222,293 | 1.354 | 86223,470 | 86223,647 |
| | 15 59 | 16 5 | 16 2 | 0.88 | 0.850 | 699 | 699,5 | 86222,470 | 86222,647 | 1.178 | 86223,648 | 86223,825 |
| 50,0 | 27 38 | 27 45 | 27 41,5 | 0.82 | 0.790 | 700 | 700 | 86222,823 | 86222,823 | 1.020 | 86223,843 | 86223,843 |
| 49,8 | 39 18 | 39 25 | 39 21,5 | 0.76 | 0.735 | 700 | 700,5 | 86222,823 | 86223,000 | 0.883 | 86223,706 | 86223,883 |
| | 50 58 | 51 6 | 51 2 | 0.71 | 0.685 | 700 | 701,5 | 86222,823 | 86223,352 | 0.766 | 86223,589 | 86224,118 |
| | 3 2 38 | 2 47 | 2 43,5 | 0.66 | 0.635 | 700 | 700 | 86222,823 | 86222,823 | 0.659 | 86223,482 | 86223,482 |
| 50,0 | 14 18 | 14 29 | 14 23,5 | 0.61 | | | | | | | | |
| 49.98 | Mean. | | | | | | | | | | 86223,737 | 86223,894 |
| 0,02 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.02. | | | —0,008 | —0,008 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,729 | 86223,886 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Night, 16th June, 1825, Port Bowen.
Clock gaining at a mean rate 69ˢ.88.

Hygʳ. { Temp. 49°. / Dew Pᵗ. 35°. } Barʳ. { Begᵍ. 29.794 mer. 45°. / Endᵍ. 29.794 — 45°. } = 29.859 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 49,2 | 9 47 14 | 47 17 | 47 15,5 | 1.19 | 1.145 | 699 | 699,5 | 86222,470 | 86222,647 | 2.143 | 86224,613 | 86224,790 |
| | 59 53 | 59 57 | 59 55 | 1.10 | 1.060 | 699 | 699,5 | 86222,470 | 86222,647 | 1.837 | 86224,307 | 86224,484 |
| | 10 11 32 | 11 37 | 11 34,5 | 1.02 | 0.980 | 699 | 699,5 | 86222,470 | 86222,647 | 1.570 | 86224,040 | 86224,217 |
| 49 | 23 11 | 23 17 | 23 14 | 0.94 | 0.910 | 699 | 699,5 | 86222,470 | 86222,647 | 1.354 | 86223,824 | 86224,001 |
| | 34 50 | 34 57 | 34 53,5 | 0.88 | 0.850 | 700 | 700,5 | 86222,823 | 86223,000 | 1.178 | 86224,001 | 86224,178 |
| | 45 30 | 45 38 | 45 34 | 0.82 | 0.790 | 699 | 700 | 86222,470 | 86222,823 | 1.020 | 86223,490 | 86223,843 |
| 49 | 57 9 | 57 19 | 57 14 | 0.76 | 0.735 | 700 | 700,5 | 86222,823 | 86223,000 | 0.883 | 86223,706 | 86223,883 |
| | 11 8 49 | 9 00 | 8 54,5 | 0 71 | 0.690 | 700 | 699,5 | 86222,823 | 86222,647 | 0.776 | 86223,599 | 86223,423 |
| | 20 29 | 20 39 | 20 34 | 0.67 | 0.645 | 701 | 701,5 | 86223,176 | 86223,352 | 0.681 | 86223,857 | 86224,033 |
| 49,2 | 32 10 | 32 21 | 22 15,5 | 0.62 | | | | | | | | |
| 49,1 | Mean. | | | | | | | | | | 86223,937 | 86224,095 |
| 0,9 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.9. | | | —0,381 | —0,381 |
| | | | | | | | | Vibrations in 24 h. at Temp. 50°, | | | 86223,556 | 86223,714 |

Morning, 17th June, 1825, Port Bowen.
Clock gaining at a mean rate 69ˢ.88.

Hygʳ. { Temp. 46°. / Dew Pᵗ. 37°. } Barʳ. { Begᵍ. 29.796 mer. 42°. / Endᵍ. 29.792 — 42°. } = 29.859 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | 1 32 51 | 32 55 | 32 53 | 1.16 | 1.120 | 700 | 701,5 | 86222,823 | 86223,352 | 2.051 | 86224,874 | 86225,403 |
| | 44 31 | 44 38 | 44 34,5 | 1.08 | 1.040 | 702 | 701 | 86223,527 | 86223,176 | 1.768 | 86225,295 | 86224,944 |
| | 56 13 | 56 18 | 56 15,5 | 1.00 | 0,965 | 702 | 703 | 86223,527 | 86223,878 | 1.522 | 86225,049 | 86225,400 |
| 46 | 2 7 55 | 8 2 | 7 58,5 | 0.93 | 0.900 | 702 | 702,5 | 86223,527 | 86223,703 | 1.324 | 86224,851 | 86225,027 |
| | 19 37 | 19 45 | 19 41 | 0.87 | 0 840 | 703 | 703,5 | 86223,878 | 86224,053 | 1.154 | 86225,032 | 86225,207 |
| | 31 20 | 31 29 | 31 24,5 | 0.81 | 0.780 | 704 | 704,5 | 86224,227 | 86224,402 | 0.995 | 86225,222 | 86225,397 |
| 46 | 43 4 | 43 14 | 43 9 | 0.75 | 0.725 | 703 | 703 | 86223,878 | 86223,878 | 0.859 | 86224,737 | 86224,737 |
| | 54 47 | 54 57 | 54 52 | 0.70 | 0.675 | 705 | 705,5 | 86224,576 | 86224,750 | 0.745 | 86225,321 | 86225,495 |
| | 3 6 32 | 6 43 | 6 37,5 | 0.65 | 0.625 | 705 | 704,5 | 86224,576 | 86224,402 | 0.638 | 86225,214 | 86225,040 |
| 46 | 18 17 | 18 27 | 18 22 | 0.60 | | | | | | | | |
| 46 | Mean. | | | | | | | | | | 86225,066 | 86225,183 |
| 4,0 | Diff. to 50°. | | | | | | | Correction for Temp. 4°.0. | | | — 1,692 | — 1,692 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,374 | 86223,491 |

## *Observation of Coincidences at Port Bowen (1st Series) — continued.*

Forenoon, 17th June, 1825, Port Bowen. Hygr. { Temp. 50°. Dew Pt. 38°. } Barr. { Begs. 29 796 mer. 45°. Ends. 29.800 – 46°.2. } = 29.864 mean cor to temp. of pend.
Clock gaining at a mean rate 69s.88.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Mean of Disap. and Re-ap. | Correct for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Mean of Disap. and Re-ap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 50,8 | 9 10 51 | 10 55 | 10 53 | 1.12 | 1.080 | 697 | 697,5 | 86221,760 | 86221,938 | 1.907 | 86223,667 | 86223,84 |
| | 22 28 | 22 33 | 22 30,5 | 1.04 | 1.000 | 698 | 698 | 86222,116 | 86222,116 | 1.635 | 86223,751 | 86223,75 |
| | 34 6 | 34 11 | 34 8,5 | 0.96 | 0.925 | 698 | 699 | 86222,116 | 86222,470 | 1.399 | 86223,515 | 86223,86 |
| 50,5 | 45 44 | 45 51 | 45 47,5 | 0.89 | 0.860 | 700 | 700 | 86222,823 | 86222,823 | 1.209 | 86224,032 | 86224,03 |
| | 57 24 | 57 31 | 57 27,5 | 0.83 | 0.805 | 699 | 699,5 | 86222,470 | 86222,647 | 1.059 | 86223,529 | 86223,7c |
| | 10 9 3 | 9 11 | 9 7 | 0.78 | 0.755 | 701 | 701,5 | 86223,176 | 86223,352 | 0.932 | 86224,108 | 86224,28 |
| 49,8 | 20 44 | 20 53 | 20 48,5 | 0.73 | 0.705 | 700 | 700,5 | 86222,823 | 86223,000 | 0.813 | 86223,636 | 86223,81 |
| | 32 24 | 32 34 | 32 29 | 0.68 | 0.655 | 701 | 701 | 86223,176 | 86223,176 | 0.701 | 86223,877 | 86223,87 |
| | 44 5 | 44 15 | 44 10 | 0.63 | o 610 | 702 | 702 | 86223,527 | 86223,527 | o 608 | 86224,135 | 86224,13 |
| 50,7 | 55 47 | 55 57 | 55 52 | 0.59 | | | | | | | | |
| 50,45 | Mean. | | | | | | | | | | 86223,806 | 86223,92 |
| | | | | | | | | | Correction for Temp. o°.45. | | + 0,190 | + 0,19 |
| 0,45 | Diff. to 50°. | | | | | | | | Vib. in 24 h. at Temp. 50°. | | 86223,996 | 86224,11 |

Afternoon, 17th June, 1825, Port Bowen. Hygr. { Temp. 52°. Dew Pt. 40°. } Barr { Begs. 29,812 mer. 47c.8. Ends. 29,820 — 48°. } = 29.882 mean cor to temp. of pend.
Clock gaining at a mean rate 69s.88.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52,2 | 1 13 34 | 13 37 | 13 35,5 | 1.17 | 1.125 | 694 | 695 | 86220,687 | 86221,046 | 2.069 | 86222,756 | 86223,11 |
| | 25 8 | 25 13 | 25 10,5 | 1.08 | 1.045 | 696 | 696 | 86221,403 | 86221,403 | 1.785 | 86223,188 | 86223,18 |
| | 36 44 | 36 49 | 36 46,5 | 1 01 | 0.970 | 698 | 698 | 86222,116 | 86222,116 | 1.538 | 86223,654 | 86223,65 |
| 51,8 | 48 22 | 48 27 | 48 24,5 | 0.93 | 0.895 | 696 | 697 | 86221,403 | 86221,760 | 1.309 | 86222,712 | 86223,06 |
| | 59 58 | 00 5 | 00 1,5 | 0.86 | 0.835 | 699 | 699 | 86222,470 | 86222,470 | 1.138 | 86223,608 | 86223,60 |
| | 2 11 37 | 11 44 | 11 40,5 | 0.81 | 0.785 | 697 | 697,5 | 86221,760 | 86221,938 | 1.007 | 86222,767 | 86222,94 |
| 52,0 | 23 14 | 23 22 | 23 18 | 0.76 | 0.735 | 698 | 698,5 | 86222,116 | 86222,293 | 0.883 | 86222,999 | 86223,17 |
| | 34 52 | 35 1 | 34 56,5 | 0.71 | 0.685 | 699 | 698,5 | 86222,470 | 86222,293 | 0.766 | 86223,236 | 86223,05 |
| | 46 31 | 46 39 | 46 35 | 0.66 | 0.640 | 697 | 698 | 86221,760 | 86222,116 | 0.670 | 86222,430 | 86222,78 |
| 53,0 | 58 8 | 58 18 | 58 13 | 0.62 | | | | | | | | |
| 52,25 | Mean. | | | | | | | | | | 86223,039 | 86223,1 |
| | | | | | | | | | Correction for Temp. 2°.25. | | + 0,952 | + 0,9 |
| 2,25 | Diff. to 50°. | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,991 | 86224,1 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Night, 17th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 52°. Dew Pt. 36°. } Bar. { Begs. 29.828 mer. 45°.5. Ends. 29.847 — 47°. } = 29.905 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Observed vibra. cor. for Arc. Disappearance. | Observed vibra. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 51 | 9 22 52 | 22 56 | 22 54 | 1.19 | | | | | | | | |
| | 34 29 | 34 33 | 34 31 | 1.10 | 1.145 | 697 | 697 | 86221,760 | 86221,760 | 2.143 | 86223,903 | 86223,903 |
| | 46 5 | 46 11 | 46 8 | 1.02 | 1.060 | 696 | 697 | 86221,403 | 86221,760 | 1.837 | 86223,240 | 86223,597 |
| 51,5 | 57 41 | 57 49 | 57 45 | 0.95 | 0.985 | 696 | 697 | 86221,403 | 86221,760 | 1.586 | 86222,989 | 86223,346 |
| | 10 9 18 | 9 27 | 9 22,5 | 0.88 | 0.915 | 697 | 697,5 | 86221,760 | 86221,938 | 1.369 | 86223,129 | 86223,307 |
| | 20 56 | 21 5 | 21 00,5 | 0.82 | 0.850 | 698 | 698 | 86222,116 | 86222,116 | 1.178 | 86223,294 | 86223,294 |
| 52,5 | 32 34 | 32 43 | 32 38 5 | 0.75 | 0.785 | 698 | 698 | 86222,116 | 86222,116 | 1.007 | 86223,123 | 86223,123 |
| | 44 11 | 44 22 | 44 16,5 | 0.70 | 0.725 | 697 | 698 | 86221,760 | 86222,116 | 0.859 | 86222,619 | 86222,975 |
| | 55 48 | 56 1 | 55 54,5 | 0.66 | 0.680 | 697 | 698 | 86221,760 | 86222,116 | 0.756 | 86222,516 | 86222,872 |
| 51,5 | 11 7 26 | 7 40 | 7 33 | 0.62 | 0.640 | 698 | 698,5 | 86222,116 | 86222,293 | 0.670 | 86222,786 | 86222,963 |
| 51,62 | Mean. | | | | | | | | | | 86223,066 | 86223,264 |
| 1,62 | Diff. to 50°. | | | | | | | | Correction for Temp. 1°.62. | | + 0,685 | + 0,685 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,751 | 86223,949 |

Morning, 18th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 51°. Dew Pt. 40°. } Bar. { Begs. 29.841 mer. 46°. Begs. 29.841 — 46°. } = 29.908 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 12 55 15 | 55 19 | 55 17 | 1.15 | | | | | | | | |
| | 1 6 51 | 6 56 | 6 53,5 | 1.07 | 1.110 | 696 | 696,5 | 86221,403 | 86221,582 | 2.014 | 86223,417 | 86223,596 |
| | 18 27 | 18 33 | 18 30 | 0.99 | 1.030 | 696 | 696,5 | 86221,403 | 86221,582 | 1.735 | 86223,138 | 86223,317 |
| 52 | 30 3 | 30 10 | 30 6,5 | 0.93 | 0.960 | 696 | 696,5 | 86221,403 | 86221,582 | 1.507 | 86222,910 | 86223,089 |
| | 41 40 | 41 47 | 41 43,5 | 0.87 | 0.900 | 697 | 697 | 86221,760 | 86221,760 | 1.324 | 86223,084 | 86223,084 |
| | 53 18 | 53 25 | 53 21,5 | 0.80 | 0.835 | 698 | 698 | 86222,116 | 86222,116 | 1.138 | 86223,254 | 86223,254 |
| 51,5 | 2 4 54 | 5 3 | 4 58,5 | 0.75 | 0.775 | 696 | 697 | 86221,403 | 86221,760 | 0.982 | 86222,385 | 86222,742 |
| | 16 32 | 16 42 | 16 37 | 0.70 | 0.725 | 698 | 698,5 | 86222,116 | 86222,293 | 0.859 | 86222,975 | 86223,152 |
| | 28 11 | 28 21 | 28 16 | 0.65 | 0.675 | 699 | 699 | 86222,470 | 86222,470 | 0.745 | 86223,215 | 86223,215 |
| 51 | 40 47 | 41 01 | 40 54 | 0.60 | 0.625 | 696 | 698 | 86221,403 | 86222,116 | 0.638 | 86222,041 | 86222,754 |
| 51,37 | Mean. | | | | | | | | | | 86222,935 | 86223,134 |
| 1,37 | Diff. to 50°. | | | | | | | | Correction for Temp. 1°.37. | | + 0,579 | + 0,579 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,514 | 86223,713 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Forenoon, 18th June 1825, Port Bowen. Clock gaining at a mean rate 69ˢ.88. Hygʳ. {Temp. 51°.5. Dew Pt. 40°.} Barʳ. {Begᵍ. 29.871 mer. 45° Endᵍ. 29.885 — 47°} = 29.946 mean cor to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. Re-ap. | Correct. for Arc. | Observed vibra. cor. for Arc Disappearance. | Observed vibra. cor. for Arc Mean of Disap. and Re-ap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 51 | 9 17 48 | 17 52 | 17 50 | 1.17 | 1.125 | 696 | 696 | 86221,403 | 86221,403 | 2.069 | 86223,472 | 86223,47 |
| | 29 24 | 29 28 | 29 26 | 1 08 | 1.045 | 696 | 696,5 | 86221,403 | 86221,582 | 1.785 | 86223,188 | 86223,36 |
| | 41 00 | 41 5 | 41 2,5 | 1.01 | 0.975 | 698 | 699 | 86222,116 | 86222,470 | 1.554 | 86223,670 | 86224,02 |
| 51,2 | 52 38 | 52 45 | 52 41,5 | 0.94 | 0.905 | 699 | 698,5 | 86222,470 | 86222,293 | 1.339 | 86223,809 | 86223,63 |
| | 10 4 17 | 4 23 | 4 20 | 0.87 | 0.845 | 699 | 699,5 | 86222,470 | 86222,647 | 1.166 | 86223,636 | 86223,81 |
| | 15 56 | 16 3 | 15 59,5 | 0.82 | 0.795 | 699 | 699,5 | 86222,470 | 86222,647 | 1.033 | 86223,503 | 86223,68 |
| 51 | 27 35 | 27 43 | 27 39 | 0.77 | 0.745 | 700 | 700 | 86222,823 | 86222,823 | 0.907 | 86223,730 | 86223,73 |
| | 39 15 | 39 23 | 39 19 | 0.72 | 0.695 | 697 | 697,5 | 86221,760 | 86221,938 | 0.788 | 86222,548 | 86222,72 |
| | 50 52 | 51 1 | 50 56,5 | 0.67 | 0.645 | 700 | 700 | 86222,823 | 86222,823 | 0.680 | 86223,503 | 86223,50 |
| 51,8 | 11 2 32 | 2 41 | 2 36,5 | 0.62 | | | | | | | | |
| 51,25 | Mean. | | | | | | | | | | 86223,451 | 86223,5 |
| | | | | | | | | | | Correction for Temp. 1°.25. | + 0,529 | + 0,5 |
| 1,25 | Diff. to 50°. | | | | | | | | | Vibra. in 24 h. at temp. 50°. | 86223,980 | 86224,0 |

Afternoon, 18th June, 1825, Port Bowen. Clock gaining at a mean rate 69ˢ.88. Hygʳ. {Temp. 52°. Dew Pt. 42°.} Bar. {Begᵍ. 29.896 mer. 48° Endᵍ. 29.901 — 48°} = 29.965 mean co to temp. of pend

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52,8 | 1 20 33 | 20 37 | 20 35 | 1.17 | 1.125 | 695 | 695 | 86221,046 | 86221,046 | 2.069 | 86223,115 | 86223,11 |
| | 32 8 | 32 12 | 32 10 | 1.08 | 1.040 | 696 | 696,5 | 86221,403 | 86221,582 | 1.768 | 86223,171 | 86223,35 |
| | 43 44 | 43 49 | 43 46,5 | 1.00 | 0.970 | 696 | 697 | 86221,403 | 86221,760 | 1.538 | 86222,941 | 86223,29 |
| 52,2 | 55 20 | 55 27 | 55 23,5 | 0.94 | 0.905 | 697 | 697,5 | 86221,760 | 86221,938 | 1.339 | 86223,099 | 86223,27 |
| | 2 6 57 | 7 5 | 7 1 | 0.87 | 0.840 | 698 | 698 | 86222,116 | 86222,116 | 1.154 | 86223,270 | 86223,27 |
| | 18 35 | 18 43 | 18 39 | 0.81 | 0.780 | 698 | 698 | 86222,116 | 86222,116 | 0 995 | 86223,111 | 86223,11 |
| 51,8 | 30 13 | 30 21 | 30 17 | 0.75 | 0.725 | 699 | 699,5 | 86222,470 | 86222,647 | 0.859 | 86223,329 | 86223,5 |
| | 41 52 | 42 1 | 42 56,5 | 0.70 | 0.675 | 700 | 700 | 86222,823 | 86222,823 | 0.745 | 86223,568 | 86223,56 |
| | 53 32 | 53 41 | 53 36,5 | 0.65 | 0.630 | 698 | 699 | 86222,116 | 86222,470 | 0.649 | 86222,765 | 86223,1 |
| 51,2 | 3 5 10 | 5 21 | 5 15,5 | 0.61 | | | | | | | | |
| 52,0 | Mean. | | | | | | | | | | 86223,152 | 86223,2 |
| | | | | | | | | | | Correction for Temp. 2°.0. | + 0,846 | + 0,8 |
| 2,0 | Diff. to 50°. | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | 86223,998 | 86224,1 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Night, 18th June, 1825, Port Bowen. Clock gaining at a mean rate 69ˢ.88. Hygʳ. {Temp. 52°. Dew Pt. 40°. Barʳ. {Begᵍ. 29.900 mer. 46°.5. Endᵍ. 29.898 — 45°. } = 29.964 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | | s. | s. | | | vib. | | |
| 51,5 | 8 59 43 | 59 47 | 59 45 | 1.19 | 1.145 | 697 | 697 | 86221,760 | 86221,760 | 2.143 | 86223,903 | 86223,903 |
| | 9 11 20 | 11 24 | 11 22 | 1.10 | 1.060 | 695 | 695,5 | 86221,046 | 86221,225 | 1.837 | 86222,883 | 86223,062 |
| | 22 55 | 23 00 | 22 57,5 | 1.02 | 0.985 | 697 | 698 | 86221,760 | 86222,116 | 1.586 | 86223,346 | 86223,702 |
| 51,0 | 34 32 | 34 39 | 34 35,5 | 0.95 | 0.920 | 697 | 697 | 86221,760 | 86221,760 | 1.384 | 86223,144 | 86223,144 |
| | 46 9 | 46 16 | 46 12,5 | 0.89 | 0.860 | 698 | 698,5 | 86222,116 | 86222,293 | 1.209 | 86223,325 | 86223,502 |
| | 57 47 | 57 55 | 57 51 | 0.83 | 0.805 | 698 | 698 | 86222,116 | 86222,116 | 1.059 | 86223,175 | 86223,175 |
| 50,8 | 10 9 25 | 9 34 | 9 29 | 0.78 | 0.750 | 698 | 699 | 86222,116 | 86222,470 | 0.920 | 86223,036 | 86223,390 |
| | 21 3 | 21 13 | 21 8 | 0.72 | 0.690 | 699 | 699,5 | 86222,470 | 86222,647 | 0.776 | 86223,246 | 86223,423 |
| | 32 42 | 32 53 | 32 47,5 | 0.66 | 0.640 | 700 | 699 | 86222,823 | 86222,470 | 0.670 | 86223,493 | 86223,140 |
| 51,3 | 44 22 | 44 31 | 44 26,5 | 0.62 | | | | | | | | |
| 51,15 | Mean. | | | | | | | | | | 86223,283 | 86223,382 |
| 1,15 | Diff. to 50°. | | | | | | | Correction for Temp. 1°.15. | | | + 0,487 | + 0,487 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,770 | 86223,869 |

Morning, 19th June, 1825, Port Bowen. Clock gaining at a mean rate 69ˢ.88. Hygʳ. {Temp. 51°. Dew Pt. 40°. Barʳ. {Begᵍ. 29.895 mer. 45.°. Endᵍ. 29.878 — 44°.2. } = 29.956 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51,0 | 1 13 59 | 14 3 | 14 1 | 1.18 | | | | | | | | |
| 50,8 | 25 34 | 25 40 | 25 37 | 1.09 | 1.135 | 695 | 696 | 86221,046 | 86221,403 | 2.106 | 86223,152 | 86223,509 |
| 50,4 | 37 10 | 37 17 | 37 13,5 | 1.02 | 1.055 | 696 | 696,5 | 86221,403 | 86221,582 | 1.820 | 86223,223 | 86223,402 |
| 50,0 | 48 48 | 48 55 | 48 51,5 | 0.95 | 0.985 | 698 | 698 | 86222,116 | 86222,116 | 1.586 | 86223,702 | 86223,702 |
| 51,0 | 2 00 26 | 00 33 | 00 29,5 | 0.88 | 0 915 | 698 | 698 | 86222,116 | 86222,116 | 1.369 | 86223,485 | 86223 485 |
| 52,0 | 12 3 | 12 12 | 12 7,5 | 0.82 | 0.850 | 697 | 698 | 86221,760 | 86222,116 | 1.173 | 86222,938 | 86223,294 |
| 52,2 | 23 40 | 23 49 | 23 44,5 | 0.77 | 0.795 | 697 | 697 | 86221,760 | 86221,760 | 1.033 | 86222,793 | 86222,793 |
| 51,5 | 35 17 | 35 27 | 35 22 | 0.72 | 0.745 | 697 | 697,5 | 86221,760 | 86221,938 | 0.907 | 86222,667 | 86222,845 |
| 51,4 | 46 55 | 47 6 | 47 00,5 | 0.67 | 0.695 | 698 | 698,5 | 86222,116 | 86222,293 | 0.788 | 86222,904 | 86223,081 |
| 51,1 | 58 34 | 58 45 | 58 39,5 | 0.62 | 0.645 | 699 | 699 | 86222,470 | 86222,470 | 0.680 | 86223,150 | 86223,150 |
| 51,14 | Mean. | | | | | | | | | | 86223,113 | 86223,251 |
| 1,14 | Diff. to 50°. | | | | | | | Correction for Temp. 1.°14. | | | + 0,482 | + 0,482 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,595 | 86223,733 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Forenoon, June 19th, 1825, Port Bowen. Hyg$^{r}$. {Temp. 52°.5. Dew Pt. 42°.} Bar$^{r}$. {Beg$^{g}$. 29.823 mer. 47°. End$^{g}$. 29.800 — 48°.} = 29.877 mean co
Clock gaining at a mean rate 69$^{s}$.88. to temp. of pen

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Disap. & Re-ap. | Observed vibra. in 24 h. by Disappear. | Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc Disappear. | Mean of Dis and Re-ap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 52,5 | 9 16 50 | 16 54 | 16 52 | 1.18 | 1.140 | 695 | 695,5 | 86221,046 | 86221,225 | 2,125 | 86223,171 | 86223,35 |
| | 28 25 | 28 30 | 28 27,5 | 1.10 | 1.060 | 695 | 695,5 | 86221,046 | 86221,225 | 1,837 | 86222,883 | 86223,06 |
| | 40 00 | 40 6 | 40 3 | 1.02 | 0.985 | 697 | 697 | 86221,760 | 86221,760 | 1,586 | 86223,346 | 86223,34 |
| 52,0 | 51 37 | 51 43 | 51 40 | 0.95 | 0.920 | 697 | 697,5 | 86221,760 | 86221,938 | 1,384 | 86223,144 | 86223,33 |
| | 10 3 14 | 3 21 | 3 17,5 | 0.89 | 0.860 | 697 | 697,5 | 86221,760 | 86221,938 | 1,209 | 86222,969 | 86223,14 |
| | 14 51 | 14 59 | 14 55 | 0.83 | 0.800 | 697 | 697,5 | 86221,760 | 86221,938 | 1,046 | 86222,806 | 86222,98 |
| 51,8 | 26 28 | 26 37 | 26 32,5 | 0.77 | 0.745 | 696 | 698 | 86221,403 | 86222,116 | 0,907 | 86222,310 | 86223,02 |
| | 38 4 | 38 17 | 38 10,5 | 0.72 | 0.690 | 704 | 702 | 86224,227 | 86223,527 | 0,776 | 86225,003 | 86224,30 |
| | 49 48 | 49 57 | 49 52,5 | 0.66 | 0.635 | 698 | 699 | 86222,116 | 86222,470 | 0,659 | 86222,775 | 86223,12 |
| 51,2 | 11 1 26 | 1 37 | 1 31,5 | 0.61 | | | | | | | | |
| 51,87 | Mean. | | | | | | | | | | 86223,156 | 86223,20 |
| 1,87 | Diff. to 50°. | | | | | | | Correction for Temp. 1°.87. | | | + 0,790 | + 0,79 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,946 | 86224,05 |

Afternoon, 19th June, 1825, Port Bowen. Hyg$^{r}$. {Temp. 52°.5. Dew Pt. 42°. .} Bar$^{r}$. {Beg$^{g}$. 29.784 mer. 48°. End$^{g}$. 29.770 — 48.2°.} = 29.842 mean co.
Clock gaining at a mean rate 69$^{s}$.88. to temp. of per.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52,5 | 1 24 31 | 24 35 | 24 33 | 1.10 | 1.055 | 695 | 696 | 86221,046 | 86221,403 | 1.820 | 86222,866 | 86223,23 |
| | 36 6 | 36 12 | 36 9 | 1.01 | 0.970 | 697 | 697,5 | 86221,760 | 86221,938 | 1.538 | 86223,298 | 86223,40 |
| | 47 43 | 47 50 | 47 46,5 | 0.93 | 0.890 | 698 | 697,5 | 86222,116 | 86221,938 | 1.295 | 86223,411 | 86223,23 |
| 52,2 | 59 21 | 59 27 | 59 24 | 0.85 | 0.825 | 697 | 697,5 | 86221,760 | 86221,938 | 1.110 | 86222,870 | 86223,03 |
| | 2 10 58 | 11 5 | 11 1,5 | 0.80 | 0.775 | 698 | 698 | 86222,116 | 86222,116 | 0.982 | 86223,098 | 86223,03 |
| | 22 36 | 22 43 | 22 39,5 | 0.75 | 0.725 | 698 | 699 | 86222,116 | 86222,470 | 0.859 | 86222,975 | 86223,39 |
| 51,8 | 34 14 | 34 23 | 34 18,5 | 0.70 | 0.675 | 698 | 699 | 86222,116 | 86222,470 | 0.745 | 86222,861 | 86223,25 |
| | 45 52 | 46 3 | 45 57,5 | 0.65 | 0.630 | 700 | 699 | 86222,823 | 86222,470 | 0.649 | 86223,472 | 86223,19 |
| | 57 32 | 57 41 | 57 36,5 | 0.61 | 0.590 | 700 | 700 | 86222,823 | 86222,823 | 0.569 | 86223,392 | 86223,32 |
| 52,0 | 3 9 12 | 9 21 | 9 16,5 | 0.57 | | | | | | | | |
| 52,12 | Mean. | | | | | | | | | | 86223,138 | 86223,27 |
| 2,12 | Diff. to 50°. | | | | | | | Correction for Temp. 2°.12. | | | + 0,897 | + 0,87 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86224,035 | 86224,14 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Night, 19th June 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. {Temp. 52°.5. Dew Pt. 42°. Barr {Begg. 29.759 mer. 47°. Endg. 29.750 — 46°.8. } = 29.819 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 52,5 | 9 32 16 | 32 19 | 32 17,5 | 1.16 | 1.120 | 695 | 695,5 | 86221,046 | 86221,225 | 2.051 | 86223,097 | 86223,276 |
| | 43 51 | 43 55 | 43 53 | 1.08 | 1.040 | 694 | 695 | 86220,687 | 86221,046 | 1.768 | 86222,455 | 86222,814 |
| | 55 25 | 55 31 | 55 28 | 1.00 | 0.970 | 696 | 696,5 | 86221,403 | 86221,582 | 1.538 | 86222,941 | 86223,120 |
| 52,0 | 10 7 1 | 7 8 | 7 4,5 | 0 94 | 0.910 | 697 | 697 | 86221,760 | 86221,760 | 1.354 | 86223,114 | 86223,114 |
| | 18 38 | 18 45 | 18 41,5 | 0.88 | 0.850 | 697 | 697,5 | 86221,760 | 86221,938 | 1.178 | 86222,938 | 86223,116 |
| | 30 15 | 30 23 | 30 19 | 0.82 | 0.790 | 697 | 698 | 86221,760 | 86222,116 | 1.020 | 86222,780 | 86223,136 |
| 52,0 | 41 52 | 42 2 | 41 57 | 0 76 | 0.735 | 698 | 698,5 | 86222,116 | 86222,293 | 0.883 | 86222,999 | 86223,176 |
| | 53 30 | 53 41 | 53 35,5 | 0.71 | 0.685 | 699 | 698,5 | 86222,470 | 86222,293 | 0.766 | 86223,236 | 86223,059 |
| | 11 5 9 | 5 19 | 5 14 | 0.66 | 0.640 | 699 | 699,5 | 86222,470 | 86222,647 | 0.670 | 86223,140 | 86223,317 |
| 51,8 | 16 48 | 16 59 | 16 53,5 | 0.62 | | | | | | | | |
| 52,07 | Mean. | | | | | | | | | | 86222,967 | 86223,125 |
| 2,07 | Diff. to 50°. | | | | | | | Correction for Temp. 2°.07. | | | + 0,875 | + 0,875 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,842 | 86224,000 |

Morning, 20th June 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. {Temp. 52°. Dew Pt. 42°. Barr. {Begg. 29.749 mer. 46°. Endg. 29.743 — 46°. } = 29.813 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52,5 | 0 55 4 | 55 9 | 55 6,5 | 1.12 | 1.080 | 696 | 696 | 86221,403 | 86221,403 | 1.907 | 86223,310 | 86223,310 |
| | 1 6 40 | 6 45 | 6 42,5 | 1.04 | 0 995 | 696 | 696,5 | 86221,403 | 86221,582 | 1.618 | 86223,021 | 86223,200 |
| | 18 16 | 18 22 | 18 19 | 0.95 | 0.915 | 696 | 697 | 86221,403 | 86221,760 | 1.369 | 86222,772 | 86223,129 |
| 51,8 | 29 52 | 30 00 | 29 56 | 0.88 | 0.855 | 697 | 697 | 86221,760 | 86221,760 | 1.193 | 86222,953 | 86222,953 |
| | 41 29 | 41 37 | 41 33 | 0.83 | 0.805 | 697 | 697 | 86221,760 | 86221,760 | 1.059 | 86222,819 | 86222,819 |
| | 53 6 | 53 14 | 53 10 | 0.78 | 0.755 | 699 | 699 | 86222,470 | 86222,470 | 0.932 | 86223,402 | 86223,402 |
| 51,6 | 2 4 45 | 4 53 | 4 49 | 0.73 | 0.705 | 698 | 698,5 | 86222,116 | 86222,293 | 0.812 | 86222,928 | 86223,105 |
| | 16 23 | 16 32 | 16 27,5 | 0.68 | 0.655 | 697 | 700,5 | 86221,760 | 86223,000 | 0.701 | 86222,461 | 86223,701 |
| | 28 00 | 28 16 | 28 8 | 0.63 | 0.610 | 699 | 699,5 | 86222,470 | 86222,647 | 0.608 | 86223,078 | 86223,255 |
| 51,2 | 39 39 | 39 56 | 39 47,5 | 0.59 | | | | | | | | |
| 51,77 | Mean. | | | | | | | | | | 86222,972 | 86223,208 |
| 1.77 | Diff. to 50°. | | | | | | | Correction for Temp. 1°.77. | | | + 0,748 | + 0,748 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,720 | 86223,956 |

## *Observation of Coincidences at Port Bowen (1st Series)— continued.*

Forenoon, 20th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 50°.5. Dew Pt. 41°. } Barr. { Begg. 29.746 mer. 46°. Endg. 29.750 — 47°. } = 29°.813 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibra. in 24 h. by Disappearance. | Observed vibra. in 24 h. by Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc Disappearance. | Vibra. in 24 h. cor. for Arc Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 51 | 9 27 45 | 27 48 | 27 46,5 | 1.17 | 1.125 | 695 | 696 | 86221,046 | 86221,403 | 2.069 | 86223,115 | 86223,472 |
| | 39 20 | 39 25 | 39 22,5 | 1.08 | 1.040 | 698 | 698 | 86222,116 | 86222,116 | 1.768 | 86223,884 | 86223,884 |
| | 50 58 | 51 3 | 51 0,5 | 1.00 | 0.965 | 698 | 698,5 | 86222,116 | 86222,293 | 1.522 | 86223,638 | 86223,815 |
| 50,8 | 10 2 36 | 2 42 | 2 39 | 0.93 | 0.895 | 698 | 698,5 | 86222,116 | 86222,293 | 1.309 | 86223,425 | 86223,602 |
| | 14 14 | 14 21 | 14 17,5 | 0.86 | 0.835 | 699 | 699,5 | 86222,470 | 86222,647 | 1.138 | 86223,608 | 86223,785 |
| | 25 53 | 26 1 | 26 57 | 0.81 | 0.785 | 700 | 700 | 86222,823 | 86222,823 | 1.007 | 86223,830 | 86223,830 |
| 50,3 | 37 33 | 37 41 | 37 37 | 0.76 | 0.730 | 701 | 700,5 | 86223,176 | 86223,000 | 0.871 | 86224,047 | 86223,871 |
| | 49 14 | 49 21 | 49 17,5 | 0.70 | 0.675 | 698 | 699,5 | 86222,116 | 86222,647 | 0.745 | 86222,861 | 86223,392 |
| | 11 00 52 | 1 2 | 00 57 | 0.65 | 0.630 | 701 | 700 | 86223,176 | 86222,823 | 0.649 | 86223,825 | 86223,472 |
| 51,2 | 12 33 | 12 41 | 12 37 | 0.61 | | | | | | | | |
| 50,82 | Mean. | | | | | | | | | | 86223,581 | 86223,686 |
| 0,82 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.82. | | | + 0,347 | + 0,34 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,928 | 86224,02 |

Afternoon, 20th June, 1825, Port Bowen. Clock gaining at a mean rate 69s.88. Hygr. { Temp. 51°. Dew Pt. 36°. } Barr. { Begg. 29.760 mer. 47°. Endg. 29.752 — 47°. } = 29.819 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50,8 | 1 32 54 | 32 57 | 32 55,5 | 1.15 | 1.105 | 697 | 697,5 | 86221,760 | 86221,938 | 1.996 | 86223,756 | 86223,934 |
| | 43 31 | 43 35 | 43 33 | 1.06 | 1.020 | 697 | 697,5 | 86221,760 | 86221,938 | 1.701 | 86223,461 | 86223,639 |
| | 55 8 | 55 13 | 55 10,5 | 0.98 | 0.950 | 698 | 698 | 86222,116 | 86222,116 | 1.476 | 86223,592 | 86223,592 |
| 50,2 | 2 6 46 | 6 51 | 6 48,5 | 0.92 | 0.895 | 698 | 699,5 | 86222,116 | 86222,647 | 1.309 | 86223,425 | 86223,956 |
| | 18 24 | 18 32 | 18 28 | 0.87 | 0.840 | 699 | 699 | 86222,470 | 86222,470 | 1.154 | 86223,624 | 86223,624 |
| | 30 3 | 30 11 | 30 7 | 0.81 | 0.780 | 699 | 699,5 | 86222,470 | 86222,647 | 0.995 | 86223,465 | 86223,642 |
| 50,1 | 41 42 | 41 51 | 41 46,5 | 0.75 | 0.725 | 700 | 700 | 86222,823 | 86222,823 | 0.859 | 86223,682 | 86223,682 |
| | 53 22 | 53 31 | 53 26,5 | 0.70 | 0.680 | 702 | 702 | 86223,527 | 86223,527 | 0.756 | 86224,283 | 86224,283 |
| | 3 5 4 | 5 13 | 5 8,5 | 0.66 | 0.635 | 700 | 699,5 | 86222,823 | 86222,647 | 0.659 | 86223,482 | 86223,306 |
| 50,1 | 16 44 | 16 52 | 16 48 | 0.61 | | | | | | | | |
| 50,3 | Mean. | | | | | | | | | | 86223,641 | 86223,740 |
| 0,3 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.3. | | | + 0,127 | + 0,127 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,768 | 86223,867 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Night, 20th June, 1825, Port Bowen.
Clock gaining 69s.88 at a mean rate.

Hygr. { Temp. 50°. / Dew Pt. 35°. } Barr. { Begs. 29.753 mer. 45° / Ends. 29.750 — 48° } = 29.820 mean cor. to temp. of pend.

| Temp. | Time of Disappearance | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibrat. in 24 h. cor. for Arc. Disappearance. | Vibrat. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 49,5 | 9 48 50 | 48 54 | 48 52 | 1.15 | 1.115 | 696 | 697 | 86221,403 | 86221,760 | 2.032 | 86223,435 | 86223,792 |
| 50,0 | 10 00 26 | 00 32 | 00 29 | 1.08 | 1.040 | 695 | 696 | 86221,046 | 86221,403 | 1.768 | 86222,814 | 86223,171 |
| 51,5 | 12 1 | 12 9 | 12 5 | 1.00 | 0.965 | 694 | 694 | 86220,687 | 86220,687 | 1.522 | 86222,209 | 86222,209 |
| 55,0 | 23 35 | 23 43 | 23 39 | 0.93 | 0.900 | 694 | 693,5 | 86220,687 | 86220,508 | 1.324 | 86222,011 | 86221,832 |
| 55,5 | 35 9 | 35 16 | 35 12,5 | 0.87 | 0.840 | 692 | 693 | 86219,967 | 86220,328 | 1.154 | 86221,121 | 86221,482 |
| 57,8 | 46 41 | 46 50 | 46 45,5 | 0.81 | 0.780 | 692 | 691,5 | 86219,967 | 86219,786 | 0,995 | 86220,962 | 86220,781 |
| 57,0 | 58 13 | 58 21 | 58 17 | 0.75 | 0.725 | 692 | 692,5 | 86219,967 | 86220,148 | 0.859 | 86220,826 | 86221,007 |
| 56,0 | 11 9 45 | 9 54 | 9 49,5 | 0.70 | 0.675 | 694 | 695 | 86220,687 | 86221,046 | 0.745 | 86221,432 | 86221,791 |
| 56,0 | 21 19 | 21 30 | 21 24,5 | 0.65 | 0.630 | 694 | 694 | 86220,687 | 86220,687 | 0.649 | 86221,336 | 86221,336 |
| 54,35 | Mean. | | | | | | | | | | 86221,794 | 86221,933 |
| 4,35 | Diff. to 50°. | | | | | | | | Correction for Temp. 4°.35. | | + 1,840 | + 1,840 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,634 | 86223,773 |

Forenoon, 21st June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.

Hygr. { Temp, 49°.5. / Dew Pt. 36° } Barr. { Begs. 29.700 mer. 47°. / Ends. 29.709 — 47°. } = 29,766 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49,8 | 9 34 13 | 34 19 | 34 16 | 1.12 | 1.080 | 700 | 699,5 | 86222,823 | 86222,647 | 1.907 | 86224,730 | 86224,554 |
| 48,5 | 45 53 | 45 58 | 45 55,5 | 1.04 | 1.005 | 698 | 699 | 86222,116 | 86222,470 | 1.650 | 86223,766 | 86224.120 |
| 49,0 | 57 31 | 57 38 | 57 34,5 | 0.97 | 0.940 | 700 | 699,5 | 86222,823 | 86222,647 | 1.445 | 86224,268 | 86224,092 |
| 49,5 | 10 9 11 | 9 17 | 9 14 | 0.91 | 0.880 | 699 | 699 | 86222,470 | 86222,470 | 1.266 | 86223,736 | 86223,736 |
| 50,8 | 20 50 | 20 56 | 20 53 | 0.85 | 0.820 | 698 | 698,5 | 86222,116 | 86222,293 | 1.099 | 86223,215 | 86223,392 |
| 50,8 | 32 28 | 32 35 | 32 31,5 | 0.79 | 0.760 | 699 | 699,5 | 86222,470 | 86222,647 | 0.944 | 86223,414 | 86223,691 |
| 50,8 | 44 7 | 44 15 | 44 11 | 0.73 | 0.705 | 700 | 700,5 | 86222,823 | 86223,000 | 0.812 | 86223,635 | 86223,812 |
| 50,6 | 55 47 | 55 56 | 15 51,5 | 0.68 | 0.660 | 700 | 700 | 86222,823 | 86222,823 | 0 712 | 86223,535 | 86223,535 |
| 50,5 | 11 7 27 | 7 36 | 7 31,5 | 0.64 | 0.620 | 700 | 700 | 86222,823 | 86222,823 | 0.628 | 86223,451 | 86223,451 |
| 50,3 | 19 7 | 19 16 | 19 11,5 | 0.60 | | | | | | | | |
| 50,06 | Mean. | | | | | | | | | | 86223,750 | 86223,820 |
| 0,06 | Diff. to 50°. | | | | | | | | Correction for Temp, 0°.06. | | + 0,025 | + 0,025 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,775 | 86223,845 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Afternoon, 21st June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.

Hygr. { Temp. 50°. / Dew Pt. 36°. } Barr. { Begg. 29.709 mer. 46°. / Endg. 29.700 — 45°. } = 29,767 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 51 | 1 31 23 | 31 27 | 31 25 | 1.15 | 1.110 | 691 | 691,5 | 86219,606 | 86219,786 | 2.014 | 86221,620 | 86221,800 |
| | 42 54 | 42 59 | 42 56,5 | 1.07 | 1.030 | 699 | 698,5 | 86222,470 | 86222,293 | 1.735 | 86224,205 | 86224,028 |
| | 54 33 | 54 37 | 54 35 | 0.99 | 0.945 | 704 | 704,5 | 86224,227 | 86224,402 | 1.460 | 86225,687 | 86225,862 |
| 49,5 | 2 6 17 | 6 22 | 6 19,5 | 0.90 | 0.870 | 698 | 699 | 86222,116 | 86222,470 | 1.237 | 86223,353 | 86223,707 |
| | 17 55 | 18 2 | 17 58,5 | 0.84 | 0.815 | 700 | 700 | 86222,823 | 86222,823 | 1.086 | 86223,909 | 86223,909 |
| | 29 35 | 29 42 | 29 38,5 | 0.79 | 0.760 | 700 | 700,5 | 86222,823 | 86223,000 | 0.944 | 86223,767 | 86223,944 |
| 49,5 | 41 15 | 41 23 | 41 19 | 0.73 | 0.705 | 700 | 700,5 | 86222,823 | 86223,000 | 0.812 | 86223,635 | 86223,812 |
| | 52 55 | 53 4 | 52 59,5 | 0.68 | 0.655 | 701 | 701,5 | 86223,176 | 86223,352 | 0.701 | 86223,877 | 86224,053 |
| | 3 4 36 | 4 46 | 4 41 | 0.63 | 0.610 | 701 | 701,5 | 86223,176 | 86223,352 | 0.608 | 86223,784 | 86223,960 |
| 49,0 | 16 17 | 16 28 | 16 22,5 | 0.59 | | | | | | | | |
| 49,75 | Mean. | | | | | | | | | | 86223,759 | 86223,897 |
| 0,25 | Diff. to 50°. | | | | | | | | Correction for Temp. 0°.25. | | — 0,106 | — 0,106 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,653 | 86223,791 |

Night, 21st June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.

Hygr. { Temp. 52°. / Dew Pt. 36°. } Barr. { Begg. 29.678 mer. 45°. / Endg. 29.671 — 46°. } = 29.739 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 53,5 | 9 17 54 | 17 58 | 17 56 | 1.15 | 1.110 | 693 | 693,5 | 86220,328 | 86220,508 | 2.014 | 86222,342 | 86222,522 |
| 53,2 | 29 27 | 29 32 | 29 29,5 | 1.07 | 1.030 | 696 | 697 | 86221,403 | 86221,760 | 1.735 | 86223,138 | 86223,495 |
| 53,0 | 41 3 | 41 10 | 41 6,5 | 0.99 | 0.955 | 695 | 695,5 | 86221,046 | 86221,225 | 1.491 | 86222,537 | 86222,716 |
| 52,5 | 52 38 | 52 46 | 52 42 | 0.92 | 0.890 | 697 | 697 | 86221,760 | 86221,760 | 1.295 | 86223,055 | 86223,055 |
| 52,0 | 10 4 15 | 4 23 | 4 19 | 0.86 | 0.830 | 698 | 698,5 | 86222,116 | 86222,293 | 1.122 | 86223,238 | 86223,415 |
| 50,0 | 15 53 | 16 2 | 15 57,5 | 0.80 | 0.770 | 700 | 699,5 | 86222,823 | 86222,647 | 0 969 | 86223,792 | 86223,616 |
| 49,5 | 27 33 | 27 41 | 27 37 | 0.74 | 0.710 | 698 | 699,5 | 86222,116 | 86222,647 | 0.824 | 86222,940 | 86223,471 |
| 51,5 | 39 11 | 39 22 | 39 16,5 | 0.68 | 0.655 | 699 | 699,5 | 86222,470 | 86222,647 | 0.701 | 86223,171 | 86223,348 |
| 52,0 | 50 50 | 51 2 | 50 56 | 0.63 | 0.610 | 698 | 700 | 86222,116 | 86222,823 | 0.608 | 86222,724 | 86223,431 |
| 53,0 | 11 2 28 | 2 42 | 2 36 | 0.59 | | | | | | | | |
| 52,02 | Mean. | | | | | | | | | | 86222,993 | 86223,230 |
| 2,02 | Diff. to 50°. | | | | | | | | Correction for Temp. 2°.02. | | + 0,854 | + 0,854 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,847 | 86224,084 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Morning, 22d June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 50°. / Dew Pt. 36°. } Barr. { Begg. 29.672 mer. 45°.5. / Endg. 29.671½ — 46°. } = 29.735 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 50 | 0 49 43 | 49 48 | 49 45,5 | 1.12 | 1.080 | 697 | 697,5 | 86221,760 | 86221,938 | 1.907 | 86223,667 | 86223,845 |
| | 1 1 20 | 1 26 | 1 23 | 1.04 | 1.005 | 698 | 699 | 86222,116 | 86222,470 | 1.650 | 86223,766 | 86224,120 |
| | 12 58 | 13 6 | 13 2 | 0.97 | 0.935 | 696 | 697 | 86221,403 | 86221,760 | 1.429 | 86222,832 | 86223,189 |
| 50,5 | 24 34 | 24 44 | 24 39 | 0.90 | 0.870 | 699 | 699,5 | 86222,470 | 86222,647 | 1.237 | 86223,707 | 86223,884 |
| | 36 13 | 36 24 | 36 18,5 | 0.84 | 0.810 | 700 | 700 | 86222,823 | 86222,823 | 1.073 | 86223,896 | 86223,896 |
| | 47 53 | 48 4 | 47 58,5 | 0.78 | 0 755 | 698 | 699 | 86222,116 | 86222,470 | 0.932 | 86223,048 | 86223,402 |
| 50,8 | 59 31 | 55 44 | 59 37,5 | 0.73 | 0.705 | 702 | 701 | 86223,527 | 86223,176 | 0.812 | 86224,339 | 86223,988 |
| | 2 11 13 | 11 24 | 11 18,5 | 0.68 | 0.660 | 698 | 698,5 | 86222,116 | 86222,293 | 0.712 | 86222,828 | 86223,005 |
| 50,0 | 22 51 | 23 3 | 22 57 | 0.64 | 0.620 | 699 | 699,5 | 86222,470 | 86222,647 | 0.628 | 86223,098 | 86223,275 |
| 51,5 | 34 30 | 34 43 | 34 36,5 | 0.60 | | | | | | | | |
| 50,56 | Mean. | | | | | | | | | | 86223,465 | 86223,623 |
| 0,56 | Diff. to 50°. | | | | | | | | Correction for Temp. 0°.56. | | + 0,237 | + 0,237 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,702 | 86223,860 |

Forenoon, 22d June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.
Hygr. { Temp. 50°. / Dew Pt, 42°. } Barr. { Begg. 29.700 mer. 45°. / Endg. 29.693 — 44°. } = 29.759 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50,2 | 9 31 13 | 31 18 | 31 15,5 | 1.10 | 1 060 | 699 | 698,5 | 86222,470 | 86222,293 | 1.837 | 86224,307 | 86224,130 |
| | 42 52 | 42 56 | 42 54 | 1.02 | 0.985 | 695 | 696,5 | 86221,046 | 86221,582 | 1.586 | 86222,632 | 86223,168 |
| | 54 27 | 54 34 | 54 30,5 | 0.95 | 0.920 | 700 | 700 | 86222,823 | 88223,823 | 1.384 | 86224,207 | 86224,207 |
| 48,5 | 10 6 7 | 6 14 | 6 10,5 | 0.89 | 0.860 | 701 | 701 | 86223,176 | 86223,176 | 1.209 | 86224,385 | 86224,385 |
| | 17 48 | 17 55 | 17 51,5 | 0.83 | 0.800 | 701 | 701 | 86223,176 | 86223,176 | 1.046 | 86224,222 | 86224,222 |
| | 29 29 | 29 36 | 29 32,5 | 0.77 | 0.745 | 695 | 695 | 86221,046 | 86221,046 | 0.907 | 86221,953 | 86221,953 |
| 48,2 | 41 4 | 41 11 | 41 7,5 | 0.72 | 0.695 | 707 | 708 | 86225,269 | 86225,615 | 0.788 | 86226,057 | 86226,403 |
| | 52 51 | 53 00 | 52 55,5 | 0 67 | 0.645 | 701 | 702 | 86223,176 | 86223,527 | 0.680 | 86223,856 | 86224,207 |
| | 11 4 32 | 4 43 | 4 37,5 | 0.62 | 0.600 | 701 | 700,5 | 86223,176 | 86223,000 | 0.589 | 86223,765 | 86223,589 |
| 48,2 | 16 13 | 16 23 | 16 18 | 0.58 | | | | | | | | |
| 48,77 | Mean. | | | | | | | | | | 86223,931 | 86224,029 |
| 1,23 | Diff. to 50°. | | | | | | | | Correction for Temp. 1°.23. | | —0,519 | —0,519 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,412 | 86223,510 |

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Afternoon, 22nd June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.

Hygr. {Temp. 49°.5. Dew Pt. 38°. Barr. {Begs. 29.693 mer. 46°. Ends. 29.693 — 44°.5. } = 29.755 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 49,8 | 1 10 51 | 10 54 | 10 52,5 | 1.18 | 1.140 | 697 | 698,5 | 86221,760 | 86222,293 | 2.125 | 86223,885 | 86224,418 |
| | 22 28 | 22 34 | 22 31 | 1.10 | 1.060 | 698 | 697,5 | 86222,116 | 86221,938 | 1.837 | 86223,953 | 86223,775 |
| | 34 6 | 34 11 | 34 8,5 | 1.02 | 0.990 | 700 | 700,5 | 86222,823 | 86223,000 | 1.602 | 86224,425 | 86224,602 |
| 48,6 | 45 46 | 45 52 | 45 49 | 0.96 | 0.930 | 699 | 699,5 | 86222,470 | 86222,647 | 1.414 | 86223,884 | 86224,061 |
| | 57 25 | 57 32 | 57 28,5 | 0.90 | 0.865 | 701 | 701,5 | 86223,176 | 86223,352 | 1.223 | 86224,399 | 86224,575 |
| | 2 9 6 | 9 14 | 9 10 | 0.83 | 0.800 | 701 | 700,5 | 86223,176 | 86223,000 | 1.046 | 86224,222 | 86224,046 |
| 48,2 | 20 47 | 20 54 | 20 50,5 | 0.77 | 0.745 | 700 | 702 | 86222,823 | 86223,527 | 0.907 | 86223,730 | 86224,434 |
| | 32 27 | 32 38 | 32 32,5 | 0.72 | 0.690 | 703 | 702,5 | 86223,878 | 86223,703 | 0.776 | 86224,654 | 86224,479 |
| | 44 10 | 44 20 | 44 15 | 0.66 | 0.640 | 702 | 703 | 86223,527 | 86223,878 | 0.670 | 86224,197 | 86224,548 |
| 46,5 | 55 52 | 56 4 | 55 58 | 0.62 | | | | | | | | |
| 48,27 | Mean. | | | | | | | | | | 86224,150 | 86224,326 |
| 1,73 | Diff. to 50°. | | | | | | | | | | —0,732 | —0,732 |
| | | | | | | | | | | | 86223,418 | 86223,594 |

Correction for Temp. 1°.73.

Vibra. in 24 h. at Temp. 50°.

Night, 22nd June, 1825, Port Bowen.
Clock gaining at a mean rate 69s.88.

Hygr. {Temp. 49°. Dew Pt. 38°. Barr. {Begs. 29.692 mer. 45°. Ends. 29.691 — 45°.5. } = 29.755 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 9 6 9 | 6 12 | 6 10,5 | 1.18 | | | | | | | | |
| | 17 47 | 17 51 | 17 49 | 1.09 | 1.135 | 698 | 698,5 | 86222,116 | 86222,293 | 2.106 | 86224,222 | 86224,399 |
| | 29 25 | 29 32 | 29 28,5 | 1.00 | 1.045 | 698 | 699,5 | 86222,116 | 86222,647 | 1.785 | 86223,901 | 86224,432 |
| 49,2 | 41 5 | 41 12 | 41 8,5 | 0.93 | 0.965 | 700 | 700 | 86222,823 | 86222,823 | 1.522 | 86224,345 | 86224,345 |
| | 52 44 | 52 52 | 52 48 | 0.86 | 0.895 | 699 | 699,5 | 86222,470 | 86222,647 | 1.309 | 86223,779 | 86223,956 |
| | 10 4 24 | 4 31 | 4 27,5 | 0.81 | 0.835 | 700 | 699,5 | 86222,823 | 86222,647 | 1.138 | 86223,961 | 86223,785 |
| 50,2 | 16 2 | 16 9 | 16 5,5 | 0.75 | 0.780 | 698 | 698 | 86222,116 | 86222,116 | 0.995 | 86223,111 | 86223,111 |
| | 27 41 | 27 52 | 27 46,5 | 0.70 | 0.725 | 699 | 701 | 86222,470 | 86223,176 | 0.859 | 88223,329 | 86224,035 |
| | 39 22 | 39 33 | 39 27,5 | 0.65 | 0.675 | 701 | 701 | 86223,176 | 86223,176 | 0.745 | 86223,921 | 86223,921 |
| 50 | 51 2 | 51 15 | 51 8,5 | 0.61 | 0.630 | 700 | 701 | 86222,823 | 86223,176 | 0.649 | 86223,472 | 86223,825 |
| 49,6 | Mean. | | | | | | | | | | 86223,782 | 86223,979 |
| 0,4 | Diff. to 50°. | | | | | | | | | | —0,169 | —0,169 |
| | | | | | | | | | | | 86223,613 | 86223,810 |

Correction for Temp. 0°.4.

Vibra. in 24 h. at Temp. 50°.

## *Observation of Coincidences at Port Bowen (1st Series)—continued.*

Morning, June 23rd, 1825, Port Bowen.
Clock gaining at a mean rate 69ˢ.88.

Hygr. { Temp. 49°. Dew Pt. 38°. Barr. { Begg. 29.686 mer. 45° Ends. 29.686 — 45° } =29.749 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Reapp. | Disappearance. | Mean of Disap. and Re-app. | | Disappearance. | Mean of Disap. and Re-app. |
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 48,9 | 1 7 35 | 7 40 | 7 37,5 | 1.15 | 1.110 | 698 | 699 | 86222,116 | 86222,470 | 2.014 | 86224,130 | 86224,484 |
| 46,0 | 19 13 | 19 20 | 19 16,5 | 1.07 | 1.030 | 700 | 700 | 86222,823 | 86222,823 | 1.735 | 86224,558 | 86224,558 |
| 46,0 | 30 53 | 31 00 | 30 56,5 | 0.99 | 0.965 | 703 | 702,5 | 86223,878 | 86223,703 | 1.522 | 86225,400 | 86225,225 |
| 48,2 | 42 36 | 42 42 | 42 39 | 0.94 | 0.910 | 699 | 699,5 | 86222,470 | 86222,647 | 1.354 | 86223,824 | 86224,001 |
| 49,5 | 54 15 | 54 22 | 54 18,5 | 0.88 | 0.850 | 698 | 699 | 86222,116 | 86222,470 | 1.178 | 86223,294 | 86223,648 |
| 50,0 | 2 5 53 | 6 2 | 5 57,5 | 0.82 | 0.785 | 700 | 700 | 86222,823 | 86222,823 | 1.007 | 86223,830 | 86223,830 |
| 49,8 | 17 33 | 17 42 | 17 37,5 | 0.75 | 0.725 | 699 | 700,5 | 86222,470 | 86223,000 | 0.859 | 86223,329 | 86223,859 |
| 50,0 | 29 12 | 29 24 | 29 18 | 0.70 | 0.675 | 699 | 698,5 | 86222,470 | 86222,293 | 0.745 | 86223,215 | 86223,038 |
| 50,0 | 40 51 | 41 2 | 40 56,5 | 0.65 | 0.630 | 700 | 700,5 | 86222,823 | 86223,000 | 0.649 | 86223,472 | 86223,649 |
| 50,2 | 52 31 | 52 43 | 52 37 | 0.61 | | | | | | | | |
| 48,86 | Mean. | | | | | | | | | | 86223,895 | 86224,032 |
| 1,14 | Diff. to 50°. | | | | | | | | Correction for Temp. 1°.14. | | —0,482 | —0,482 |
| | | | | | | | | | Vibrations in 24 h. at Temp. 50°. | | 86223,413 | 86223,550 |

Forenoon, 23rd June, 1825, Port Bowen.
Clock gaining at a mean rate 69ˢ.88.

Hygr. { Temp. 50°. Dew Pt. 37°. Barr. { Begg. 29.700 mer. 45° End. 29.709 — 45°.5 } = 29.767 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49,5 | 9 18 41 | 18 44 | 18 42,5 | 1.18 | 1.135 | 697 | 698,5 | 86221,760 | 86222,293 | 2.106 | 86223,866 | 86224,399 |
| 49,0 | 30 18 | 30 24 | 30 21 | 1.09 | 1.050 | 699 | 698,5 | 86222,470 | 86222,293 | 1.803 | 86224,273 | 86224,096 |
| 48,2 | 41 57 | 42 2 | 41 59,5 | 1.01 | 0.975 | 699 | 700,5 | 86222,470 | 86223,000 | 1.554 | 86224,024 | 86224,554 |
| 48,5 | 53 36 | 53 44 | 53 40 | 0.94 | 0.910 | 701 | 700,5 | 86223,176 | 86223,000 | 1.354 | 86224,530 | 86224,354 |
| 48,8 | 10 5 17 | 5 24 | 5 20,5 | 0.88 | 0.850 | 700 | 700 | 86222,823 | 86222,823 | 1.178 | 86224,001 | 86224,001 |
| 49,0 | 16 57 | 17 4 | 17 00,5 | 0.82 | 0.790 | 700 | 700,5 | 86222,823 | 86223,000 | 1.020 | 86223,843 | 86224,020 |
| 49,0 | 28 37 | 28 45 | 28 41 | 0.76 | 0.735 | 700 | 701 | 86222,823 | 86223,176 | 0.883 | 86223,706 | 86224,059 |
| 48,8 | 40 17 | 40 27 | 40 22 | 0.71 | 0.685 | 702 | 702,5 | 86223,527 | 86223,703 | 0.766 | 86224,293 | 86224,469 |
| 48,8 | 51 59 | 52 10 | 52 4,5 | 0.66 | 0.640 | 703 | 702,5 | 86223,878 | 86223,703 | 0.670 | 86224,548 | 86224,373 |
| 48,9 | 11 3 42 | 3 52 | 3 47 | 0.62 | | | | | | | | |
| 48,85 | Mean. | | | | | | | | | | 86224,120 | 86224,258 |
| 1,15 | Diff. to 50°. | | | | | | | | Correction for Temp. 1°.15. | | —0,486 | —0,486 |
| | | | | | | | | | Vibrations in 24 h. at Temp. 50°. | | 86223,634 | 86223,772 |

## Table I. (*First Series.*)

Time by the Clock of Transits of Stars at Port Bowen, Prince Regent's Inlet, June 1825.

| Stars. | 14th. | 16th. | 18th. | 19th. | 20th. | 22d. | 23d. |
|---|---|---|---|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. |
| Arcturus ..... | ..... | ..... | ..... | 8 8 27,51 | 8 5 41,67 | 8 0 9,52 | 7 57 23,6 |
| Arcturus 2d & 3d wires | ..... | 8 16 33,03 | ..... | 8 8 13,71 | 8 5 27,95 | 7 59 55,92 | 7 57 9,9 |
| Arcturus 3d wire ..... | 8 22 19,38 | 8 16 46,79 | ..... | 8 8 27,22 | 8 5 41,46 | 8 00 9,56 | 7 57 23,7 |
| Arcturus 3d, 4th, 5th w. | 8 22 46,90 | ..... | ..... | 8 8 54,91 | 8 6 8,98 | 8 00 36,91 | 7 57 51,0 |
| Arcturus 5th wire .... | 8 23 14,42 | ..... | 8 12 8,93 | 8 9 22,26 | 8 6 36,5 | 8 1 4,35 | 7 58 18,2 |
| α Lyræ ..... | 12 45 9,33 | ..... | 12 34 4,02 | 12 31 17,73 | 12 28 31,32 | 12 22 59,16 | 12 22 59,1 |

## Table II.

### Transits of the Sun.

Time by Clock at the moment of Mean Noon.

| 15th. | 17th. | 18th. | 19th. | 21st. | 22d. | 23d. |
|---|---|---|---|---|---|---|
| h. m s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. |
| 11 47 41,29 | 11 50 00,78 | 11 51 10,52 | 11 52 20,07 | 11 54 39,86 | 11 55 49,45 | 11 56 59,66 |

From these two Tables, which are formed from the Transit Table, the following rates for the clock, contained in Tables III. and IV. have been computed.

Those in Table III. by dividing the difference between the times of transit of each star, on the successive days as given in Table I. by the interval in days, substracting the quotient from $3^m\ 55^s.91$, the acceleration in one day, and applying a correction to the remainder, for the change in Æ of each star during the interval of their respective successive transits, to obtain the rate in a sidereal day.

Those in Table IV. by comparing the time by the clock at the moment of mean noon of each day, as shown in Table II. with that on each succeeding day, and dividing the difference by the number of days in the interval, by which the rate in a mean solar day for 21 separate intervals has been obtained.

## Table III.

Rate of the Clock by the Stars. (Gaining.)

| June 1825. Stars. | From 14 to 16 | From 14 to 18 | From 14 to 19 | From 14 to 20 | From 14 to 22 | From 14 to 23 | From 16 to 19 | From 16 to 20 | From 16 to 22 | From 16 to 23 | From 18 to 19 | From 18 to 20 | From 18 to 22 | From 18 to 23 | From 19 to 20 | From 19 to 22 | From 19 to 23 | From 20 to 22 | From 20 to 23 | From 22 to 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. |
| Arcturus ..... | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | 70,08 | 69,92 | 69,96 | 69,85 | 69,92 | 70,06 |
| Arcturus 2d & 3d | —— | —— | —— | —— | —— | —— | 69 48 | 69,65 | 69,74 | 69,76 | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— |
| —— 3d wire . | 69,63 | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— |
| —— 3, 4, 5 w. | —— | —— | 69,52 | 69,60 | 69,67 | 69,72 | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— | —— |
| —— 5 wire .. | —— | 69,55 | —— | —— | —— | —— | —— | —— | —— | —— | 69,25 | 69,71 | 69,78 | 69,78 | —— | —— | —— | —— | —— | —— |
| α Lyræ ..... | —— | 69,57 | 69,58 | 69,57 | 69,63 | 69,67 | —— | —— | —— | —— | 69,61 | 69,55 | 69,69 | 69,75 | 69,49 | 69,38 | 69,78 | 69,82 | 69,88 | 70,01 |
| Mean ..... | 69,63 | 69,57 | 69,56 | 69,58 | 69,65 | 69,69 | 69,48 | 69,65 | 69,74 | 69,76 | 69,54 | 69,58 | 69,71 | 69,76 | 69,78 | 69,65 | 69,87 | 69,83 | 69,90 | 70,03 |
| Proportion for rate in $3^m\ 56^s$. | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 | + 0,19 |
| Rate in a mean solar day... | 69,82 | 69,76 | 69,75 | 69,77 | 69,84 | 69,88 | 69,67 | 69,84 | 69,93 | 69,95 | 69,73 | 69,77 | 69,90 | 69,95 | 69,97 | 69,84 | 70,06 | 70,02 | 70,09 | 70,22 |

## Table IV.

Rate of the Clock by the Sun. (Gaining.)

| From 15 to 17 | From 15 to 18 | From 15 to 19 | From 15 to 21 | From 15 to 22 | From 15 to 23 | From 17 to 18 | From 17 to 19 | From 17 to 21 | From 17 to 22 | From 17 to 23 | From 18 to 19 | From 18 to 21 | From 18 to 22 | From 18 to 23 | From 19 to 21 | From 19 to 22 | From 19 to 23 | From 21 to 22 | From 21 to 23 | From 22 to 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. |
| 69,74 | 69,74 | 69,69 | 69,76 | 69,74 | 69,80 | 69,74 | 69,64 | 69,77 | 69,73 | 69,81 | 69,55 | 69,78 | 69,73 | 69,83 | 69,89 | 69,79 | 69,90 | 69,59 | 69,90 | 70,21 |

## Table V. (*1st Series.*)

Vibrations of the Pendulum at Port Bowen, computed at the mean rate of the Clock, viz. 86469,88 vibrations in a mean solar day.

| Date. | Time of the Day. | Barometer. | Therm. | Vibrations in 24 h. at temp. 50o. | |
|---|---|---|---|---|---|
| | | | | Disappearance. | Mean of Disap. & Re-appearance. |
| | | Inches. | o | | |
| June 14th | Night ..... | 29,918 | 50.83 | 86223,637 | 86223,837 |
| 15 | Morning ... | 29,922 | 48.87 | 86223,702 | 86223,840 |
| —— | Forenoon... | ,906 | 49.05 | 86223,886 | 86224,004 |
| —— | Afternoon .. | ,857 | 46.50 | 86223,612 | 86223,690 |
| —— | Night ..... | ,835 | 46.53 | 86223,637 | 86223,812 |
| 16 | Morning ... | 29,836 | 47.80 | 86223,430 | 86223,548 |
| —— | Forenoon... | ,843 | 49.28 | 86224,541 | 86224,658 |
| —— | Afternoon .. | ,868 | 49.98 | 86223,729 | 86223,886 |
| —— | Night ..... | ,859 | 49.10 | 86223,556 | 86223,714 |
| 17 | Morning ... | 29,859 | 46.00 | 86223,374 | 86223,491 |
| —— | Forenoon... | ,864 | 50.45 | 86223,996 | 86224,114 |
| —— | Afternoon .. | ,882 | 52.25 | 86223,991 | 86224,130 |
| —— | Night ..... | ,905 | 51.62 | 86223,751 | 86223,949 |
| 18 | Morning ... | 29,908 | 51.37 | 86223,514 | 86223,713 |
| —— | Forenoon... | ,946 | 51.25 | 86223,980 | 86224,079 |
| —— | Afternoon .. | ,965 | 52.00 | 86223,998 | 86224,136 |
| —— | Night ..... | ,964 | 51.15 | 86223,770 | 86223,869 |
| 19 | Morning ... | 29,956 | 51.14 | 86223,595 | 86223,733 |
| —— | Forenoon... | ,877 | 51.87 | 86223,946 | 86224,086 |
| —— | Afternoon .. | ,842 | 52.12 | 86224,035 | 86224,134 |
| —— | Night ..... | ,819 | 52.07 | 86223,842 | 86224,000 |
| 20 | Morning ... | 29,813 | 51.77 | 86223,720 | 86223,956 |
| —— | Forenoon... | ,813 | 50.82 | 86223,928 | 86224,027 |
| —— | Afternoon .. | ,819 | 50.30 | 86223,768 | 86223,867 |
| —— | Night ..... | ,820 | 54.35 | 86223,634 | 86223,773 |
| 21 | Forenoon... | 29,766 | 50.06 | 86223,775 | 86223,845 |
| —— | Afternoon .. | ,767 | 49.75 | 86223,653 | 86223,791 |
| —— | Night ..... | ,739 | 52.02 | 86223,847 | 86224,084 |
| 22 | Morning ... | 29,735 | 50.56 | 86223,702 | 86223,860 |
| —— | Forenoon... | ,759 | 48.77 | 86223,412 | 86223,510 |
| —— | Afternoon .. | ,755 | 48.27 | 86223,418 | 86223,594 |
| —— | Night ..... | ,755 | 49.60 | 86223,613 | 86223,810 |
| 23 | Morning ... | 29,749 | 48.86 | 86223,413 | 86223,550 |
| —— | Forenoon... | ,767 | 48.85 | 86223,634 | 86223,772 |
| | Mean. | 29,844 | 50.15 | 86223,736 | 86223,878 |

## Table VI.

### By the Stars.

| June, 1825. | | Computed vibrations of the pendulum in 24 h. the clock gaining 69s.88 at a mean rate in a mean solar day. | | Observed rate of the clock by Stars' Transits. | Corr. to vibrations for diff. of rate and 69s.88. | Correct number of vibrations made by the pendulum in a mean solar day at temp. 50°. | | No. of stars observed. | Interval in days. | Factors. |
|---|---|---|---|---|---|---|---|---|---|---|
| From | To | Disappearance. | Mean of Dis. and Re-app. | | | Disappearance. | Mean of Dis. and Re-app. | | | |
| | | | | s. | vib. | | | | | |
| 14th Night | 16th Night | 86223,748 | 86223,888 | 69.82 | — 0,06 | 86223,688 | 86223,828 | 0,25 | 2 | 0,5 |
| — | 18th — | 86223,771 | 86223,910 | 69.76 | — 0,12 | 86223,651 | 86223,790 | 1,25 | 4 | 5,0 |
| — | 19th — | 86223,787 | 86223,925 | 69.75 | — 0 13 | 86223,657 | 86223,795 | 1,75 | 5 | 8,75 |
| — | 20th — | 86223,783 | 86223,922 | 69.77 | — 0,11 | 86223,673 | 86223,812 | 1,75 | 6 | 10,5 |
| — | 22nd — | 86223,750 | 86223,892 | 69.84 | — 0,04 | 86223,710 | 86223,852 | 1,75 | 8 | 14,0 |
| — | 23rd — | 86223,736 | 86223,878 | 69.88 | — | 86223,736 | 86223,878 | 1,75 | 9 | 15,75 |
| 16th Night | 19th Night | 86223,796 | 86223,934 | 69.67 | — 0,21 | 86223,586 | 86223,724 | 1,50 | 3 | 4,5 |
| — | 20th — | 86223,788 | 86223,928 | 69.84 | — 0,04 | 89223,748 | 86223,888 | 1,50 | 4 | 6,0 |
| — | 22nd — | 86223,742 | 86223,886 | 69.93 | + 0,05 | 86223,792 | 86223,936 | 1,50 | 6 | 9,0 |
| — | 23rd — | 86223,726 | 86223,869 | 69.95 | + 0,07 | 86223,796 | 86223,939 | 1,50 | 7 | 10,5 |
| 18th Night | 19th Night | 86223,838 | 86223,964 | 69.73 | — 0,15 | 86223,688 | 86223,814 | 1,25 | 1 | 1,25 |
| — | 20th — | 86223,804 | 86223,938 | 69.77 | — 0,11 | 86223,694 | 86223,828 | 1,25 | 2 | 2,5 |
| — | 22nd — | 86223,728 | 86223,871 | 69.90 | + 0,02 | 86223,748 | 86223,891 | 1,25 | 4 | 5,0 |
| — | 23rd — | 86223,706 | 86223,848 | 69.95 | + 0,07 | 86223,776 | 86223,918 | 1,25 | 5 | 6,25 |
| 19th Night | 20th Night | 86223,778 | 86223,925 | 69.97 | + 0,09 | 86223,868 | 86224,015 | 2,0 | 1 | 2,0 |
| — | 22nd — | 86223,693 | 86223,843 | 69 84 | — 0,04 | 86223,653 | 86223,803 | 2,0 | 3 | 6,0 |
| — | 23rd — | 86223,668 | 86223,817 | 70.06 | + 0,18 | 86223,848 | 86223,997 | 2,0 | 4 | 8,0 |
| 20th Night | 22nd Night | 86223,679 | 86223,829 | 70.02 | + 0,14 | 86223,819 | 86223,969 | 2,0 | 2 | 4,0 |
| — | 23rd — | 86223,655 | 86223,803 | 70.09 | + 0,21 | 86223,865 | 86224,013 | 2,0 | 3 | 6,0 |
| 22nd Night | 23rd — | 86223,553 | 86223,711 | 70.22 | + 0,34 | 86223,893 | 86224,051 | 2,0 | 1 | 2,0 |
| | | | Mean. | | | 86223,744 | 86223,887 | Sum of Factors | | 127,5 |

Table VII.

By the Sun.

| June 1825. | | Computed vibrations of the pendulum in 24 h. the clock gaining 69s.88 at a mean rate in a mean solar day. | | Observed rate of the clock by sun's transits. | Corr. for diff. of obsvd. rate and 69s.88. | Correct number of vibrations made by the pendulum in a mean solar day at temp. 50° | | No. of stars observed. | Interval of Transits. | Factors. |
|---|---|---|---|---|---|---|---|---|---|---|
| From | To | Disappear. | Mean of Dis. and Re-app. | | | Disappear. | Mean of Dis. and Re app. | | | |
| | | | | s. | vib. | | | | | |
| 15th Aftn | 17th Forn | 86223,734 | 86223,864 | 69.74 | — 0,14 | 86223,594 | 86223,724 | 2 | 2 | 4 |
| — | 18th | 86223,759 | 86223,899 | 69.74 | — 0,14 | 86223,619 | 86223,759 | 2 | 3 | 6 |
| — | 19th | 86223,776 | 86223,913 | 69.69 | — 0,19 | 86223,586 | 86223,723 | 2 | 4 | 8 |
| — | 21st | 86223,788 | 86223,922 | 69.76 | — 0,12 | 86223,668 | 86223,802 | 2 | 6 | 12 |
| — | 22d | 86223,768 | 86223,906 | 69.74 | — 0,14 | 86223,628 | 86223,766 | 2 | 7 | 14 |
| — | 23d | 86223,736 | 86223,877 | 69.80 | — 0,08 | 86223,656 | 86223,797 | 2 | 8 | 16 |
| 17th Aftn | 18th Forn | 86223,809 | 86223,968 | 69.74 | — 0,14 | 86223,669 | 86223,828 | 2 | 1 | 2 |
| — | 19th | 86223,818 | 86223,962 | 69.64 | — 0,24 | 86223,578 | 86223,722 | 2 | 2 | 4 |
| — | 21st | 86223,816 | 86223,953 | 69.77 | — 0,11 | 86223,706 | 86223,843 | 2 | 4 | 8 |
| — | 22d | 86223,782 | 86223,923 | 69.73 | — 0,15 | 86223,632 | 86223,773 | 2 | 5 | 10 |
| — | 23d | 86223,736 | 86223,881 | 69.81 | — 0,07 | 86223,666 | 86223,811 | 2 | 6 | 12 |
| 18th Aftn | 19th Forn | 86223,827 | 86223,956 | 69.55 | — 0,33 | 86223,497 | 86223,626 | 2 | 1 | 2 |
| — | 21st | 86223,819 | 86223,948 | 69.78 | — 0,10 | 86223,719 | 86223,848 | 2 | 3 | 6 |
| — | 22d | 86223,775 | 86223,911 | 69.73 | — 0,15 | 86223,625 | 86223,761 | 2 | 4 | 8 |
| — | 23d | 86223,721 | 86223,863 | 69.83 | — 0,05 | 86223,671 | 86223,813 | 2 | 5 | 10 |
| 19th Aftn | 21st Forn | 86223,815 | 86223,943 | 69.89 | + 0,01 | 86223,825 | 86223,953 | 2 | 2 | 4 |
| — | 22d | 86223,756 | 86223,895 | 69.79 | — 0,09 | 86223,666 | 86223,805 | 2 | 3 | 6 |
| — | 23d | 86223,693 | 86223,838 | 69.90 | + 0,02 | 86223,713 | 86223,858 | 2 | 4 | 8 |
| 21st Aftn | 22d Forn | 86223,653 | 86223,811 | 69.59 | — 0,29 | 86223,363 | 86223,521 | 2 | 1 | 2 |
| — | 23d | 86223,586 | 86223,746 | 69.90 | + 0,02 | 86223,606 | 86223,766 | 2 | 2 | 4 |
| 22d Aftn | 23d Forn | 86223,519 | 86223,681 | 70.21 | + 0,33 | 86223,849 | 86224,011 | 2 | 1 | 2 |
| Mean | | | | | | 86223,645 | 86223,786 | Sum of Factors | | 148 |

The number of vibrations made by the pendulum in 24 mean solar hours, as obtained by the disappearance of the white disk, from rates deduced by the transits of stars, is 86223,744, and by the sun 86223,645. And of those resulting from the mean of disappearance and re-appearance by the stars, is 86223,877, and by the sun 86223,786; but the sums of the factors being respectively 127,5, and 148, the

mean number of vibrations in 24 hours is 86223,659 by the observation of disappearance, and 86223,800 by the mean of disappearance and re-appearance.

The mean height of the barometer was 29,844 inches, and the mean temp. 50°.15 ; whence it appears that the specific gravity of the pendulum was to that of air, as 7000,6 to 1, which gives 6ˢ.158 as a correction additive for the buoyancy of the atmosphere. The ball of the pendulum was found by levelling to be 121,04 feet above low water (neap tides), the correction for which by the duplicate ratio of distances from the earth's centre (3950,858 miles) is, 0ˢ.500 in 24 hours. And as the station was the tabular surface of a bed of secondary limestone, I suppose the proper multiplier is $\frac{66}{100}$, which will give 0ˢ.330 for the correction to be added due to this elevation. These corrections being applied to the number of vibrations before found, will give the number of vibrations that would have been made by the pendulum in a mean solar day, in vacuo at the level of the sea, the temperature being 50° of FAHRENHEIT at Port Bowen, in latitude* 73° 13′ 39″.4 N, longitude 88° 54′ 48″ W, and are as follows :

By the observation of disappearance - 86230,147

By the mean of disappearance and re-appear. 86230,288

The state of the ice in the offing being such, as to indicate no immediate prospect of the ships leaving Port Bowen, I gladly availed myself of Captain PARRY's permission to pursue these observations by another series ; the difference between the results of which, and those of the first series, being only 0.105 of a vibration in 24 hours, affords, it is presumed,

* The elements of the observations for the latitude, and longitude, are given in the Appendix to the Narrative of Captain PARRY's Third Voyage for the Discovery of a North-West Passage.

a satisfactory proof, that no material error in the rate of the clock is to be feared, from the limited number of transits of stars, to which I was confined during the experiments.

The following are the observations of the Second Series.

### *Experiment* II.—*Second Series at Port Bowen, July* 1825.

Comparisons of Chronometer No. I. with the Clock.

| Date. | Chronometer. | Clock. | Difference. |
|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. |
| Noon 6th. | 2 16 23,5 | 9 17 00 | 4 59 23,5 |
| — — | 2 26 23 | 9 27 00 | 4 59 23 |
| P. M. — | 9 21 33,5 | 4 22 30 | 4 59 3,5 |
| — — | 9 32 3 | 4 33 00 | 4 59 3 |
| — — | 1 37 51,5 | 8 39 00 | 4 58 51,5 |
| — — | 1 48 51 | 8 50 00 | 4 58 51 |
| P. M. 7th. | 9 19 56 | 4 22 00 | 4 57 56 |
| — — | 9 30 55,5 | 4 33 00 | 4 57 55,5 |
| — — | 1 35 44 | 8 38 00 | 4 57 44 |
| — — | 1 46 43,5 | 8 49 00 | 4 57 43,5 |
| Noon 8th. | 2 16 8 | 9 19 00 | 4 57 8 |
| — — | 2 27 7,5 | 9 30 00 | 4 57 7,5 |
| P. M. — | 9 11 48,5 | 4 15 00 | 4 56 48,5 |
| — — | 9 22 48 | 4 26 00 | 4 56 48 |
| — — | 1 29 36,5 | 8 33 00 | 4 56 36,5 |
| — — | 1 51 35,5 | 8 55 00 | 4 56 35,5 |
| Noon 9th. | 2 17 00,5 | 9 21 00 | 4 56 0,5 |
| — — | 2 28 00 | 9 32 00 | 4 56 00 |
| P. M. — | 9 4 41,5 | 4 9 00 | 4 55 41,5 |
| — — | 9 15 41 | 4 20 00 | 4 55 41 |
| — — | 1 32 29 | 8 37 00 | 4 55 29 |
| — — | 1 42 28,5 | 8 47 00 | 4 55 28,5 |
| Noon 10th. | 2 14 53 | 9 20 00 | 4 54 53 |
| — — | 2 24 52,5 | 9 30 00 | 4 54 52,5 |
| P. M. — | 8 58 34 | 4 4 00 | 4 54 34 |
| — — | 9 19 33 | 4 25 00 | 4 54 33 |
| — — | 1 25 21,5 | 8 31 00 | 4 54 21,5 |
| — — | 1 35 21 | 8 41 00 | 4 54 21 |

## *Transits observed at Port Bowen, July* 1825—(*2nd Series.*)

| Date. | Stars. | 1st Wire observed. | 1st Wire corrected. | 2nd Wire. | 3rd Wire. | 4th Wire. | 5th Wire. | Mean Chron. | Comparison of Chro. with Clock. | Mean Clock. | Clock at mean Noon. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | h. m. s. | h. m. s. | m. s. | h. m. s. | m. s. | m. s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. |
| July 6th Noon | ⊙'s 1st Limb | 2 18 4 | ..... | 18 325 | 2 19 00,5 | 19 29 | 19 56,5 | | | | |
| | ⊙'s 2nd Limb | 2 20 21 | ..... | 20 49,75 | 2 21 18 | 21 45,5 | 22 13,5 | | | | |
| | ⊙'s Centre | 2 19 12,5 | 2 19 13,26 | 19 41,12 | 2 20 9,25 | 20 37,25 | 21 5 | 2 29 9,19 | 4 59 23,31 | 9 20 45,88 | 9 16 28,54 |
| P. M. | Arcturus | 9 23 50,5 | 9 23 51,24 | 24 18,5 | 9 24 46 | 25 13 | 25 40,6 | 9 24 45,89 | 4 59 3,35 | 4 25 42,54 | |
| | α Lyræ | 1 46 17 | 1 46 17,9 | 46 51 | 1 47 23,5 | 47 56 | 48 29 | 1 47 23,48 | 4 58 51,07 | 8 48 32,41 | |
| P. M. 7th | Arcturus | 9 19 56,5 | 9 19 57,24 | 20 25,5 | 9 20 52,5 | 21 20 | 21 47,5 | 9 20 52,54 | 4 57 55,96 | 4 22 56,58 | |
| | α Lyræ | 1 42 23,5 | 1 42 24,4 | 42 57,5 | 1 43 30,5 | 44 3,5 | 44 36 | 1 43 30,4 | 4 57 43,65 | 8 45 46,75 | |
| 8th Noon | ⊙'s 1st Limb | 2 18 28 | ..... | 18 57,5 | 2 19 25 | 19 52,5 | 20 20,5 | | | | |
| | ⊙'s 2nd Limb | 2 20 45,5 | ..... | 21 14 | 2 21 42 | 22 10 | 22 38 | | | | |
| | ⊙'s Centre | 2 19 36,75 | 2 19 37,51 | 20 5,75 | 2 20 33,5 | 21 1,25 | 21 29,25 | 2 20 33,46 | 4 57 7,8 | 9 23 25,66 | 9 18 48,99 |
| P. M. | Arcturus | 9 16 4 | 9 16 4,74 | 16 32 | 9 16 59 | 17 26,5 | 17 54 | 9 16 59,21 | 4 56 48,26 | 4 20 10,95 | |
| | α Lyræ | 1 38 30 | 1 38 30,9 | 39 4,5 | 1 39 37 | 40 10 | 40 42,5 | 1 39 36,98 | 4 56 36,05 | 8 43 0,93 | |
| 9th Noon | ⊙'s 1st Limb | 2 18 40,5 | ..... | 19 9 | 2 19 37 | 20 4,7 | 20 32,5 | | | | |
| | ⊙'s 2nd Limb | 2 20 56,9 | ..... | 21 25,5 | 2 21 53,5 | 22 21 | 22 49 | | | | |
| | ⊙'s Centre | 2 19 48,7 | 2 19 49,46 | 20 17,25 | 2 20 45,25 | 21 12,85 | 21 40,75 | 2 20 45,13 | 4 56 0,33 | 9 24 44,8 | 9 19 59,03 |
| P. M. 9th | Arcturus | 9 12 10 | 9 12 10,74 | 12 38,5 | 9 13 5,5 | 13 33 | 14 00,5 | 9 13 5,62 | 4 55 41,08 | 4 17 24,54 | |
| | α Lyræ | 1 34 37 | 1 34 37,9 | 35 11 | 1 35 43,5 | 36 16,5 | 36 49,5 | 1 35 43,65 | 4 55 28,84 | 8 40 14,81 | |
| 10th Noon | ⊙'s 1st Limb | 2 18 51,5 | ..... | 19 20,5 | 2 19 48 | 20 16 | 20 43,5 | | | | |
| | ⊙'s 2nd Limb | 2 21 8,25 | ..... | 21 37,5 | 2 22 5 | 22 33 | 23 1 | | | | |
| | ⊙'s Centre | 2 19 59,87 | 2 20 00,63 | 20 29 | 2 20 56,5 | 21 24,5 | 21 52,25 | 2 20 56,56 | 4 54 52,7 | 9 26 3,86 | 9 21 9,36 |
| P. M. | Arcturus | 9 8 16,5 | 9 8 17,24 | 8 45 | 9 9 12,5 | 9 39,5 | 10 7 | 9 9 12,29 | 4 54 33,49 | 4 14 38,8 | |
| | α Lyræ | 1 30 43,2 | 1 30 44,10 | 31 17 | 1 31 50 | 32 23 | 32 55,5 | 1 31 49,93 | 4 54 21,18 | 8 37 28,75 | |

## *Observation of Coincidences at Port Bowen (2nd Series).*

P. M. July 6, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88. in 24 h.

Hygr. { Temp. 51°. / Dew Pt. 40°. } Barr. { Begg. 29 694 mer. 48°.5. / Endg. 29.694 — 48°.5. } = 29.755 mean cor to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct for Arc. | Vibra. in 24 h. cor. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Mean of Disap. and Re-ap. | | Disappearance. | Mean of Disa and Re-ap. |
| o | h. m. s. | m. s. | m. s. | o | v | s. | s. | | | vib. | | |
| 50,6 | 10 31 36 | 31 39 | 31 37,5 | 1.18 | 1.140 | 694 | 695 | 86220,687 | 86221,046 | 2.125 | 86222,812 | 86223,17 |
| 50,9 | 42 10 | 42 15 | 42 12,5 | 1.10 | 1.060 | 696 | 696 | 86221,403 | 86221,403 | 1.837 | 86223,240 | 86223,24 |
| 51,0 | 53 46 | 53 51 | 43 48,5 | 1.02 | 0.985 | 696 | 696 | 86221,403 | 86221,403 | 1.586 | 86222,989 | 86222,98 |
| 50,9 | 11 5 22 | 5 27 | 5 24,5 | 0.95 | 0.920 | 697 | 698,5 | 86221,760 | 86222,293 | 1.384 | 86223,144 | 86223,67 |
| 50,5 | 16 59 | 17 7 | 17 3 | 0.89 | 0.855 | 697 | 697,5 | 86221,760 | 86221,938 | 1.193 | 86222,953 | 86223,13 |
| 50,3 | 28 36 | 28 45 | 28 40,5 | 0.82 | 0.795 | 698 | 698 | 86222,116 | 86222,116 | 1.033 | 86223,149 | 86223,14 |
| 50,1 | 40 14 | 40 23 | 40 18,5 | 0.77 | 0.745 | 700 | 700 | 86222,823 | 86222,823 | 0.907 | 86223,730 | 86223,73 |
| 50,1 | 51 54 | 52 3 | 51 58,5 | 0.72 | 0.690 | 698 | 699 | 86222,116 | 86222,470 | 0 776 | 86222,892 | 86223,24 |
| 50,5 | 12 3 32 | 3 43 | 3 37,5 | 0.66 | 0 640 | 699 | 699 | 86222,470 | 86222,470 | 0.670 | 86223,140 | 86223,14 |
| 51,0 | 15 11 | 15 22 | 15 16,5 | 0.62 | | | | | | | | |
| 50,59 | Mean. | | | | | | | | | | 86223,117 | 86223,27 |
| 0,59 | Diff. to 50°. | | | | | | | | Correction for Temp. 0°.59. | | + 0,249 | + 0,24 |
| | | | | | | | | | Vib. in 24 h. at Temp. 50°. | | 86223,366 | 86223,52 |

P. M. July 6, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88. in 24 h.

Hygr. { Temp. 50°.5. / Dew Pt. 40°.0. } Barr. { Begg. 29,694 mer. 48c.5. / Endg. 29,760 — 49°. } = 29.757 mean cor to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51,0 | 12 32 4 | 32 7 | 32 5,5 | 1.17 | 1.130 | 695 | 696 | 86221,046 | 86221,403 | 2.088 | 86223,134 | 86223,49 |
| 50,6 | 43 39 | 43 44 | 43 41,5 | 1.09 | 1.050 | 697 | 697 | 86221,760 | 86221,760 | 1.803 | 86223,563 | 86223,56 |
| 50,5 | 55 16 | 55 21 | 55 18,5 | 1.01 | 0.975 | 696 | 697 | 86221,403 | 86221,760 | 1.554 | 86222,957 | 86223,31 |
| 50,3 | 1 6 52 | 6 59 | 6 55,5 | 0.94 | 0.920 | 698 | 698,5 | 86222,116 | 86222,293 | 1.384 | 86223,500 | 86223,67 |
| 50,3 | 18 30 | 18 38 | 18 34 | 0.88 | 0.850 | 698 | 697,5 | 86222,116 | 86221,938 | 1.178 | 86223,294 | 86223,11 |
| 50,8 | 30 8 | 30 15 | 30 11,5 | 0.82 | 0.790 | 696 | 697 | 86221,403 | 86221,760 | 1.020 | 86222,423 | 86222,78 |
| 51,2 | 41 44 | 41 53 | 41 48,5 | 0.76 | 0.730 | 699 | 699,5 | 86222,470 | 86222,647 | 0.871 | 86223,341 | 86223,51 |
| 51,0 | 53 23 | 53 33 | 43 28 | 0.70 | 0.675 | 698 | 698 | 86222,116 | 86222,116 | 0.745 | 86222,861 | 86222,86 |
| 50,9 | 2 5 1 | 5 11 | 5 6 | 0.65 | 0.630 | 699 | 699,5 | 86222,470 | 86222,647 | 0.649 | 86223,119 | 86223,29 |
| 50,8 | 16 40 | 16 51 | 16 45,5 | 0.61 | | | | | | | | |
| 50,74 | Mean. | | | | | | | | | | 86223,132 | 86223,29 |
| 0,74 | Diff. to 50°. | | | | | | | | Correction for Temp. 0°.74. | | + 0,313 | + 0,3 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,445 | 86223,6 |

## *Observation of Coincidences at Port Bowen (2nd Series)—continued.*

A.M. July 7, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h.

Hygr. { Temp. 53°. Dew Pt. 44°.

Barr. { Begs. 29.684 mer. 49°. Ends. 29.690 — 51°. } = 29.749 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-ap. pearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 52,8 | 4 7 26 | 7 29 | 7 27,5 | 1.16 | 1.120 | 693 | 694 | 86220,328 | 86220,687 | 2.051 | 86222,379 | 86222,738 |
| 52,2 | 18 59 | 19 4 | 19 1,5 | 1.08 | 1.040 | 694 | 694,5 | 86220,687 | 86220,867 | 1.768 | 86222,455 | 86222,635 |
| 52,9 | 30 33 | 30 39 | 30 36 | 1.00 | 0.965 | 694 | 694 | 86220,687 | 86220,687 | 1.523 | 86222,210 | 86222,210 |
| 53,9 | 42 7 | 42 13 | 43 10 | 0.93 | 0.900 | 695 | 695,5 | 86221,046 | 86221,225 | 1.324 | 86222,370 | 86222,549 |
| 53,5 | 53 42 | 53 49 | 53 45,5 | 0.87 | 0.845 | 694 | 694,5 | 86220,687 | 86220,867 | 1.166 | 86221,853 | 86222,033 |
| 53,2 | 5 5 16 | 5 24 | 5 20 | 0.82 | 0.795 | 696 | 696,5 | 86221,403 | 86221,582 | 1.033 | 86222,436 | 86222,615 |
| 53,0 | 16 52 | 17 1 | 17 56,5 | 0.77 | 0.745 | 697 | 696 | 86221,760 | 86221,403 | 0.907 | 86222,667 | 86222,310 |
| 52,0 | 28 29 | 28 36 | 28 32,5 | 0 72 | 0.695 | 694 | 696,5 | 86220,687 | 86221,582 | 0.788 | 86221,475 | 86222,370 |
| 52,2 | 40 3 | 40 15 | 40 9 | 0.67 | 0.645 | 697 | 697 | 86221,760 | 86221,760 | 0.680 | 86222,440 | 86222,440 |
| 52,6 | 51 40 | 51 52 | 51 46 | 0.62 | | | | | | | | |
| 52,83 | Mean. | | | | | | | | | | 86222,254 | 86222,433 |
| 2,83 | Diff. to 50°. | | | | | | | | Correction for Temp. 2°.83. | | + 1,197 | + 1,197 |
| | | | | | | | | | Vibrations in 24 h. at Temp. 50°. | | 86223,451 | 86223,630 |

A.M. July 7, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h.

Hygr. { Temp. 54°. Dew Pt. 43°.

Barr. { Begs. 29.682 mer. 51°. Ends. 29.681 — 51°.2. } = 29.742 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 53,8 | 6 32 28 | 32 31 | 32 29,5 | 1.18 | 1.140 | 692 | 693 | 86219,967 | 86220,328 | 2.125 | 86222,092 | 86222,453 |
| 53,5 | 44 00 | 45 5 | 44 2,5 | 1.10 | 1.060 | 692 | 692 | 86219,967 | 86219,967 | 1.837 | 86221,804 | 86221,804 |
| 53,5 | 55 32 | 55 37 | 55 34,5 | 1.02 | 0.985 | 694 | 694,5 | 86220,687 | 86220,867 | 1.586 | 86222,273 | 86222,453 |
| 54,0 | 7 7 6 | 7 12 | 7 9 | 0.95 | 0.915 | 693 | 694 | 86220,328 | 86220,687 | 1.369 | 86221,697 | 86222,056 |
| 54,0 | 18 39 | 18 47 | 18 43 | 0.88 | 0.850 | 694 | 694,5 | 86220,687 | 86220,867 | 1.178 | 86221,865 | 86222,045 |
| 54,0 | 30 13 | 30 22 | 30 17,5 | 0.82 | 0 795 | 695 | 695 | 86221,046 | 86221,046 | 1.033 | 86222,079 | 86222,079 |
| 54,0 | 41 48 | 41 57 | 41 52,5 | 0.77 | 0.745 | 694 | 694 | 86220,687 | 86220,687 | 0.907 | 86221,594 | 86221,594 |
| 54,0 | 53 22 | 53 31 | 53 26,5 | 0.72 | 0.695 | 696 | 696 | 86221,403 | 86221,403 | 0.788 | 86222,191 | 86222,191 |
| 53,6 | 8 4 58 | 5 7 | 5 2,5 | 0.67 | 0.650 | 695 | 695,5 | 86221,046 | 86221,225 | 0.691 | 86221,737 | 86221,916 |
| 53,1 | 16 33 | 16 43 | 16 38 | 0.63 | | | | | | | | |
| 53,75 | Mean. | | | | | | | | | | 86221,926 | 86222,066 |
| 3,75 | Diff. to 50°. | | | | | | | | Correction for Temp. 3°.75. | | + 1,586 | + 1,586 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,512 | 86223,652 |

## *Observation of Coincidences at Port Bowen (2nd Series)—continued.*

P. M. July 7, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygʳ. { Temp. 53°. Dew Pt. 43°.

Barʳ. { Begᵍ. 29.683 mer. 51°.5. Endᵍ. 29.692 — 51°. } = 29.746 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 52,8 | 10 28 44 | 28 47 | 28 45,5 | 1.16 | 1.120 | 693 | 693,5 | 86220,328 | 86220,508 | 2.051 | 86222,379 | 86222,559 |
| 52,6 | 40 17 | 40 21 | 40 19 | 1.08 | 1.045 | 694 | 694,5 | 86220,687 | 86220,867 | 1.785 | 86222,472 | 86222,652 |
| 52,7 | 51 51 | 51 56 | 51 53,5 | 1.01 | 0.975 | 695 | 695 | 86221,046 | 86221,046 | 1.554 | 86222,600 | 86222,600 |
| 52,2 | 11 3 26 | 3 31 | 3 28,5 | 0.94 | 0.905 | 694 | 695 | 86220,687 | 86221,046 | 1.339 | 86222,026 | 86222,385 |
| 52,0 | 15 00 | 15 7 | 15 3,5 | 0.87 | 0.845 | 696 | 696 | 86221,403 | 86221,403 | 1.166 | 86222,569 | 86222,569 |
| 52,5 | 26 36 | 26 43 | 26 39,5 | 0.82 | 0.790 | 696 | 697 | 86221,403 | 86221,760 | 1.020 | 86222,423 | 86222,780 |
| 53,0 | 38 12 | 38 21 | 38 16,5 | 0.76 | 0.735 | 697 | 696,5 | 86221,760 | 86221,582 | 0.883 | 86222,643 | 86222,465 |
| 53,0 | 49 49 | 49 57 | 49 53 | 0.71 | 0.680 | 695 | 695,5 | 86221,046 | 86221,225 | 0.756 | 86221,802 | 86221,981 |
| 53,1 | 12 1 4 | 1 33 | 1 28,5 | 0.65 | 0.635 | 696 | 697 | 86221,403 | 86221,760 | 0.659 | 86222,062 | 86222,419 |
| 53,1 | 13 00 | 13 11 | 13 5,5 | 0.62 | | | | | | | | |
| 52,7 | Mean. | | | | | | | | | | 86222,331 | 86222,490 |
| 2,7 | Diff. to 50°. | | | | | | | Correction for Temp. 27°. | | | + 1,142 | + 1,142 |
| | | | | | | | | Vibrations in 24 h. at Temp. 50°. | | | 86223,473 | 86223,632 |

P. M. July 7, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygʳ. { Temp. 53°. Dew Pt. 43°.

Barʳ. { Begᵍ. 29.692 mer. 51°. Endᵍ. 29.700 — 51°.2. } = 29.756 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52,8 | 1 6 40 | 6 44 | 6 42 | 1.16 | 1.120 | 694 | 694,5 | 86220,687 | 86220,867 | 2.051 | 86222,738 | 86222,918 |
| 52,5 | 18 14 | 18 19 | 18 16,5 | 1.08 | 1.040 | 693 | 693,5 | 86220,328 | 86220,508 | 1.768 | 86222,096 | 86222,276 |
| 53,0 | 29 47 | 29 53 | 29 50 | 1.00 | 0.970 | 694 | 694 | 86220,687 | 86220,687 | 1.538 | 86222,225 | 86222,225 |
| 53,5 | 41 21 | 41 27 | 41 24 | 0.94 | 0.900 | 695 | 695,5 | 86221,046 | 86221,225 | 1.324 | 86222,370 | 86222,549 |
| 52,8 | 52 56 | 53 3 | 52 59,5 | 0.86 | 0.830 | 696 | 696 | 86221,403 | 86221,403 | 1,122 | 86222,525 | 86222,525 |
| 52,7 | 2 4 32 | 4 39 | 4 35,5 | 0.80 | 0.775 | 695 | 695,5 | 86221,046 | 86221,225 | 0.982 | 86222,028 | 86222,207 |
| 52,6 | 16 7 | 16 15 | 16 11 | 0.75 | 0.725 | 694 | 695 | 86220,687 | 86221,046 | 0.859 | 86221,546 | 86221,905 |
| 53,7 | 27 41 | 27 51 | 27 46 | 0.70 | 0.675 | 695 | 695,5 | 86221,046 | 86221,225 | 0.745 | 86221,791 | 86221,970 |
| 53,8 | 39 16 | 39 27 | 39 21,5 | 0.65 | 0.630 | 696 | 696 | 86221,403 | 86221,403 | 0.649 | 86222,052 | 86222,052 |
| 53,5 | 50 52 | 51 3 | 50 57,5 | 0.61 | | | | | | | | |
| 53,09 | Mean. | | | | | | | | | | 86222,152 | 86222,292 |
| 3,09 | Diff. to 50°. | | | | | | | Correction for Temp. 3°.09. | | | + 1,307 | + 1,307 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,459 | 86223,599 |

## *Observation of Coincidences at Port Bowen (2nd Series)—continued.*

A. M. July 8, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h. Hygr. { Temp. 50°. Dew Pt. 40°. } Bar. { Begˢ. 29.749 mer. 48°. Endˢ. 29.747 — 48°.2. } = 29.810 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Observed vibra. cor. for Arc. Disappearance. | Observed vibra. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 49,8 | 4 12 42 | 12 47 | 12 44,5 | 1.16 | 1.120 | 696 | 696 | 86221,403 | 86220,403 | 2.051 | 86223,454 | 86223,454 |
| 49,9 | 24 18 | 24 23 | 24 20,5 | 1.08 | 1.045 | 696 | 696,5 | 86221,403 | 86221,582 | 1.786 | 86223,189 | 86223,368 |
| 50,5 | 35 54 | 36 00 | 35 57 | 1.01 | 0.975 | 696 | 696,5 | 86221,403 | 86221,582 | 1.554 | 86222,957 | 86223,136 |
| 50,8 | 47 30 | 47 37 | 47 33,5 | 0.94 | 0.905 | 696 | 696,5 | 86221,403 | 86221,582 | 1.339 | 86222,742 | 86222,921 |
| 50,5 | 59 6 | 59 14 | 59 10 | 0.87 | 0.840 | 698 | 698,5 | 86222,116 | 86222,293 | 1.154 | 86223,270 | 86223,447 |
| 50,3 | 5 10 44 | 10 53 | 10 48,5 | 0.81 | 0.780 | 698 | 698 | 86222,116 | 86222,116 | 0.995 | 86223,111 | 86223,111 |
| 50,0 | 22 22 | 22 31 | 22 26,5 | 0.75 | 0.730 | 699 | 700,5 | 86222,470 | 86223,000 | 0.871 | 86223,341 | 86223,871 |
| 49,9 | 34 1 | 34 13 | 34 7 | 0.71 | 0.685 | 699 | 698,5 | 86222,470 | 86222,293 | 0.766 | 86223,236 | 86223,059 |
| 49,8 | 45 40 | 45 51 | 45 45,5 | 0.66 | 0.635 | 700 | 700 | 86222,823 | 86222,823 | 0.659 | 86223,482 | 86223,482 |
| 50,0 | 57 20 | 57 31 | 57 25,5 | 0.61 | | | | | | | | |
| 50,15 | Mean. | | | | | | | | | | 86223,198 | 86223,316 |
| 0,15 | | | | | | | | Correction for Temp. 0°.15. | | | + 0,063 | + 0,063 |
| | Diff. to 50°. | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,261 | 86223,379 |

A. M. July 8, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h. Hygr. { Temp. 50°. Dew Pt. 40°. } Bar. { Begˢ. 29.750 mer. 48°.2. Endˢ. 29.751 — 48°. } = 29.810 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49,9 | 6 49 8 | 49 11 | 49 9,5 | 1.16 | 1.120 | 696 | 697 | 86221,403 | 86221,760 | 2.051 | 86223,454 | 86223,811 |
| 49,5 | 7 00 44 | 00 49 | 00 46,5 | 1.08 | 1.045 | 696 | 697 | 86221,403 | 86221,760 | 1.786 | 86223,189 | 86223,546 |
| 49,2 | 12 20 | 12 27 | 12 23,5 | 1.01 | 0.975 | 699 | 698 | 86222,470 | 86222,116 | 1.554 | 86224,024 | 86223,670 |
| 49,1 | 23 59 | 24 4 | 22 1,5 | 0.94 | 0.905 | 698 | 699,5 | 86222,116 | 86222,647 | 1.339 | 86223,455 | 86223,986 |
| 49,2 | 35 37 | 35 45 | 35 41 | 0.87 | 0.840 | 699 | 698,5 | 86222,470 | 86222,293 | 1.154 | 86223,624 | 86223,447 |
| 49,2 | 47 16 | 47 23 | 47 19,5 | 0.81 | 0.780 | 698 | 699 | 86222,116 | 86222,470 | 0.995 | 86223,111 | 86223,465 |
| 49,2 | 58 54 | 59 3 | 54 58,5 | 0.75 | 0.730 | 701 | 701 | 86223,176 | 86223,176 | 0.871 | 86224,047 | 86224,047 |
| 49,4 | 8 10 35 | 10 44 | 10 39,5 | 0.71 | 0.685 | 699 | 699,5 | 86222,470 | 86222,647 | 0.766 | 86223,236 | 86223,413 |
| 49,4 | 22 14 | 22 24 | 22 19 | 0.66 | 0.635 | 701 | 701 | 86223,176 | 86223,176 | 0.659 | 86223,835 | 86223,835 |
| 49,5 | 33 55 | 34 5 | 34 00 | 0.61 | | | | | | | | |
| 49,36 | Mean. | | | | | | | | | | 86223,553 | 86223,691 |
| 0,64 | | | | | | | | Correction for Temp. 0°.64. | | | — 0,271 | — 0,271 |
| | Diff. to 50°. | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,282 | 86223,420 |

## *Observation of Coincidences at Port Bowen (2nd Series)—continued.*

P.M. July 8, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h. Hygr. { Temp. 51°. Dew Pt. 40°. } Barr. { Begg. 29.750 mer. 49°.5. Endg. 29.752 — 49°. } = 29.812 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. Re-ap. | Correct. for Arc. | Observed vibra. cor. for Arc. Disappearance. | Observed vibra. cor. for Arc. Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 51,0 | 10 22 15 | 22 19 | 22 17 | 1.16 | 1.120 | 695 | 695,5 | 86221,046 | 86221,225 | 2.051 | 86223,097 | 86223,276 |
| 50,8 | 33 50 | 33 55 | 33 52,5 | 1.08 | 1.045 | 696 | 697 | 86221,403 | 86221,760 | 1.785 | 86223,188 | 86223,545 |
| 50,5 | 45 26 | 45 33 | 45 29,5 | 1.01 | 0.980 | 697 | 697 | 86221,760 | 86221,760 | 1.570 | 86223,330 | 86223,330 |
| 50,7 | 57 3 | 57 10 | 57 6,5 | 0.95 | 0.915 | 697 | 698 | 86221,760 | 86222,116 | 1.369 | 86223,129 | 86223,485 |
| 50,5 | 11 8 40 | 8 49 | 8 44,5 | 0.88 | 0.850 | 698 | 698 | 86222,116 | 86222,116 | 1.178 | 86223,294 | 86223,294 |
| 50,3 | 20 18 | 20 27 | 20 22,5 | 0.82 | 0.790 | 700 | 699,5 | 86222,823 | 86222,647 | 1 020 | 86223,843 | 86223,667 |
| 50,2 | 31 58 | 32 6 | 32 2 | 0.76 | 0.735 | 699 | 700 | 86222,470 | 86222,823 | 0.883 | 86223,353 | 86223,706 |
| 50,0 | 43 37 | 43 47 | 43 42 | 0.71 | 0.680 | 699 | 699,5 | 86222,470 | 86222,647 | 0.756 | 86223,226 | 86223,403 |
| 50,0 | 55 16 | 55 27 | 55 21,5 | 0.65 | 0.630 | 698 | 699,5 | 86222,116 | 86222,647 | 0.649 | 86222,765 | 86223,296 |
| 49,6 | 12 6 54 | 7 8 | 7 1 | 0.61 | | | | | | | | |
| 50,36 | Mean. | | | | | | | | | | 86223,247 | 86223,445 |
| | | | | | | | | | | Correction for Temp. 0°.36. | + 0,152 | + 0,152 |
| 0,36 | Diff. to 50°. | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | 86223,399 | 86223,597 |

P.M. July 8, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h. Hygr. { Temp. 50°. Dew Pt. 38°.5. } Bar. { Begg. 29.752 mer. 49°. Endg. 29.764 — 49°.5. } = 29.819 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50,5 | 12 35 36 | 35 39 | 35 37,5 | 1.19 | 1.150 | 696 | 696,5 | 86221,403 | 86221,582 | 2.162 | 86223,565 | 86223,744 |
| 50,2 | 47 12 | 47 16 | 47 14 | 1.11 | 1.070 | 696 | 696,5 | 86221,403 | 86221,582 | 1.872 | 86223,275 | 86223,454 |
| 50,1 | 58 48 | 58 53 | 58 50,5 | 1.03 | 0.990 | 697 | 698 | 86221,760 | 86222,116 | 1.602 | 86223,362 | 86223,718 |
| 50,2 | 1 10 25 | 10 32 | 10 28,5 | 0.95 | 0.915 | 697 | 697 | 86221,760 | 86221,760 | 1.369 | 86223,129 | 86223,129 |
| 50,7 | 22 2 | 22 9 | 22 5,5 | 0.88 | 0.850 | 698 | 698,5 | 86222,116 | 86222,293 | 1.178 | 86223,294 | 86223,471 |
| 50,8 | 33 40 | 33 48 | 33 44 | 0.82 | 0.795 | 698 | 698,5 | 86222,116 | 86222,293 | 1.033 | 86223,149 | 86223,326 |
| 50,8 | 45 18 | 45 27 | 45 22,5 | 0.77 | 0.745 | 698 | 698,5 | 86222,116 | 86222,293 | 0.907 | 86223,023 | 86223,200 |
| 50,6 | 56 56 | 57 6 | 57 1 | 0.72 | 0.695 | 700 | 700,5 | 86222,823 | 86223,000 | 0.788 | 86223,611 | 86223,788 |
| 50,5 | 2 8 36 | 8 47 | 8 41,5 | 0.67 | 0.645 | 700 | 700 | 86222,823 | 86222,823 | 0.680 | 86223,503 | 86223,503 |
| 50,5 | 20 16 | 20 27 | 20 21,5 | 0.62 | | | | | | | | |
| 50,49 | Mean. | | | | | | | | | | 86223,323 | 86223,481 |
| | | | | | | | | | | Correction for Temp. 0°.49. | + 0,207 | + 0,207 |
| 0,49 | Diff. to 50°. | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | 86223,530 | 86223,688 |

## *Observation of Coincidences at Port Bowen (2nd Series)—continued.*

A.M. July 9, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h,

Hygr. { Temp. 52°. Dew P. 44°.

Barr. { Begs. 29.750 mer. 49°. Ends. 29.750 — 51°. } = 29.812 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Mean of Disap. and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 51,0 | 6 44 31 | 44 35 | 44 33 | 1.19 | 1.145 | 695 | 695,5 | 86221,046 | 86221,225 | 2.143 | 86223,189 | 86223,368 |
| 51,0 | 56 6 | 56 11 | 56 8,5 | 1.10 | 1.060 | 696 | 696 | 86221,403 | 86221,403 | 1.837 | 86223,240 | 86223,240 |
| 50,8 | 7 7 42 | 7 47 | 7 44,5 | 1.02 | 0.985 | 696 | 697 | 86221,403 | 86221,760 | 1.586 | 86222,989 | 86223,346 |
| 51,0 | 19 18 | 19 25 | 19 21,5 | 0.95 | 0.915 | 698 | 697,5 | 86222,116 | 86221,938 | 1.369 | 86223,485 | 86223,307 |
| 51,1 | 30 56 | 31 2 | 30 59 | 0.88 | 0.850 | 697 | 697,5 | 86221,760 | 86221,938 | 1.178 | 86222,938 | 86223,116 |
| 51,0 | 42 33 | 42 40 | 42 36,5 | 0.82 | 0.790 | 698 | 698 | 86222,116 | 86222,116 | 1.020 | 86223,136 | 86223,136 |
| 51,0 | 54 11 | 54 18 | 54 14,5 | 0.76 | 0.740 | 697 | 698 | 86221,760 | 86222,116 | 0.895 | 86222,655 | 86223,011 |
| 51,8 | 8 5 48 | 5 57 | 5 52,5 | 0.72 | 0.695 | 698 | 698,5 | 86222,116 | 86222,293 | 0.788 | 86222,904 | 86223,081 |
| 52,3 | 17 26 | 17 36 | 17 31 | 0.67 | 0.645 | 698 | 697,5 | 86222,116 | 86221,938 | 0.680 | 86222,796 | 86222,618 |
| 51,37 | Mean. | | | | | | | | | | 86223,037 | 86223,136 |
| 1,37 | Diff. to 50°. | | | | | | | | Correction for Temp. 1°.37. | | + 0,579 | + 0,579 |
| | | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | 86223,616 | 86223,715 |

P.M. July 9, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h.

Hygr. { Temp. 53°, Dew Pt. 42°.

Barr. { Begs. 29,751 mer. 51°.5. Ends. 29,749 — 51°.5. } = 29,811 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 53,0 | 10 30 19 | 30 21 | 30 20 | 1.20 | 1.160 | 692 | 693,5 | 86219,967 | 86220,508 | 2.200 | 86222,167 | 86222,708 |
| 52,6 | 41 51 | 41 56 | 41 53,5 | 1.12 | 1.080 | 696 | 695,5 | 86221,403 | 86221,225 | 1.907 | 86223,310 | 86223,132 |
| 52,7 | 53 27 | 53 31 | 53 29 | 1.04 | 1.005 | 694 | 695,5 | 86220,687 | 86221,225 | 1.651 | 86222,338 | 86222,876 |
| 52,6 | 11 5 1 | 5 8 | 5 4,5 | 0.97 | 0.935 | 695 | 695 | 86221,046 | 86221,046 | 1.429 | 86222,475 | 86222,475 |
| 52,6 | 16 36 | 16 43 | 16 39,5 | 0.90 | 0.870 | 696 | 696,5 | 86221,403 | 86221,582 | 1.237 | 86222,640 | 86222,819 |
| 52,7 | 28 12 | 28 20 | 28 16 | 0.84 | 0.815 | 696 | 696 | 86221,403 | 86221,403 | 1.086 | 86222,489 | 86222,489 |
| 52,8 | 39 48 | 39 56 | 39 52 | 0.79 | 0.760 | 697 | 697 | 86221,760 | 86221,760 | 0.944 | 86222,704 | 86222,704 |
| 52,8 | 51 25 | 51 33 | 51 29 | 0.73 | 0.710 | 697 | 697 | 86221,760 | 86221,760 | 0.824 | 86222,584 | 86222,584 |
| 52,9 | 12 3 2 | 3 10 | 3 6 | 0.69 | 0.660 | 696 | 697 | 86221,403 | 86221,760 | 0.712 | 86222,115 | 86222,472 |
| 52,8 | 14 38 | 14 48 | 14 43 | 0.63 | | | | | | | | |
| 52,75 | Mean. | | | | | | | | | | 86222,536 | 86222,695 |
| 2,75 | Diff. to 50°. | | | | | | | | Correction for Temp. 2°.75. | | + 1,163 | + 1,163 |
| | | | | | | | | | Vibra. in 24 h at Temp. 50°. | | 86223,699 | 86223,858 |

## *Observation of Coincidences at Port Bowen (2nd Series)—continued.*

P. M. July 9, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h.

Hygr. { Temp. 53°. Dew Pt. 42°.

Barr. { Begg. 29.749 mer. 51°.5. Endg. 29.739 — 51°.8. } = 29.804 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds by Clock. Disap. | Interval in seconds by Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 53,0 | 1 26 10 | 26 13 | 26 11,5 | 1.21 | 1.170 | 692 | 692,5 | 86219,967 | 86220,148 | 2.238 | 86222,205 | 86222,386 |
| 53,0 | 37 42 | 37 46 | 37 44 | 1.13 | 1.090 | 694 | 694,5 | 86220,687 | 86220,867 | 1.942 | 86222,629 | 86222,809 |
| 52,5 | 49 16 | 49 21 | 49 18,5 | 1.05 | 1.015 | 695 | 696 | 86221,046 | 86221,403 | 1.683 | 86222,729 | 86223,086 |
| 52,3 | 2 00 51 | 00 58 | 00 54,5 | 0.98 | 0.950 | 695 | 695 | 86221,046 | 86221,046 | 1.476 | 86222,522 | 86222,522 |
| 52,3 | 12 26 | 12 33 | 12 29,5 | 0.92 | 0.885 | 696 | 696 | 86221,403 | 86221,403 | 1.280 | 86222,683 | 86222,683 |
| 52,7 | 24 2 | 24 9 | 24 5,5 | 0.85 | 0.820 | 695 | 695,5 | 86221,046 | 86221,225 | 1.099 | 86222,145 | 86222,324 |
| 53,0 | 35 37 | 35 45 | 35 41 | 0.79 | 0.760 | 696 | 697 | 86221,403 | 86221,760 | 0.944 | 86222,347 | 86222,704 |
| 52,9 | 47 13 | 47 23 | 47 18 | 0.73 | 0.705 | 697 | 697 | 86221,760 | 86221,760 | 0.812 | 86222,572 | 86222,572 |
| 53,0 | 58 50 | 59 00 | 58 55 | 0.68 | 0.655 | 696 | 696,5 | 86221,403 | 86221,582 | 0.701 | 86222,104 | 86222,283 |
| 53,0 | 3 10 26 | 10 37 | 10 31,5 | 0.63 | | | | | | | | |
| 52,77 | Mean. | | | | | | | | | | 86222,437 | 86222,597 |
| 2,77 | Diff. to 50°. | | | | | | | Correction for Temp. 2°.77. | | | +1,172 | +1,172 |
| | | | | | | | | Vibrations in 24 h. at Temp. 50°. | | | 86223,609 | 86223,769 |

A. M. July 10, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h.

Hygr. { Temp. 50°. Dew Pt. 43°.

Barr. { Begg. 29.709 mer. 47°.5. Endg. 29.710 — 48°. } = 29.772 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49,9 | 5 5 39 | 5 42 | 5 40,5 | 1.20 | 1.160 | 696 | 697 | 86221,403 | 86221,760 | 2.200 | 86223,603 | 86223,960 |
| 49,8 | 17 15 | 17 20 | 17 17,5 | 1.12 | 1.080 | 698 | 698 | 86222,116 | 86222,116 | 1.907 | 86224,023 | 86224,023 |
| 49,6 | 28 53 | 28 58 | 28 55,5 | 1.04 | 1.005 | 697 | 697,5 | 86221,760 | 86221,938 | 1.650 | 86223,410 | 86223,588 |
| 49,7 | 40 30 | 40 36 | 40 33 | 0.97 | 0.935 | 698 | 699 | 86222,116 | 86222,470 | 1.429 | 86223,545 | 86223,899 |
| 49,9 | 52 8 | 52 16 | 52 12 | 0.90 | 0.865 | 699 | 698,5 | 86222,470 | 86222,293 | 1.223 | 86223,693 | 86223,516 |
| 49,7 | 6 3 47 | 3 54 | 3 50,5 | 0.83 | 0.805 | 699 | 700 | 86222,470 | 86222,823 | 1.059 | 86223,529 | 86223,882 |
| 49,5 | 15 26 | 15 35 | 15 30,5 | 0.78 | 0.755 | 701 | 701,5 | 86223,176 | 86223,352 | 0.932 | 86224,108 | 86224,284 |
| 50,0 | 27 7 | 27 17 | 27 12 | 0.73 | 0.705 | 699 | 699 | 86222,470 | 86222,470 | 0.812 | 86223,282 | 86223,282 |
| 49,9 | 38 46 | 38 56 | 38 51 | 0.68 | 0.655 | 700 | 700,5 | 86222,823 | 86223,000 | 0.701 | 86223,524 | 86223,701 |
| 49,4 | 50 26 | 50 37 | 50 31,5 | 0.63 | | | | | | | | |
| 49,74 | Mean. | | | | | | | | | | 86223,635 | 86223,793 |
| 0,26 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.26. | | | — 0,110 | — 0,110 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,525 | 86223,683 |

## *Observation of Coincidences at Port Bowen (2nd Series)—continued.*

A. M. July 10, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygr. { Temp. 50°. / Dew Pt. 43°.

Barr. { Begg. 29.710 mer. 48°. / Endg. 29.712 — 48°. } = 29.771 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Mean of Disap. and Re-ap. | | Disappearance. | Mean of Disap. and Re-ap. |
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 49,7 | 7 12 18 | 12 22 | 12 20 | 1.15 | 1.110 | 697 | 697,5 | 86221,760 | 86221,938 | 2.014 | 86223,774 | 86223,952 |
| 50,0 | 23 55 | 24 00 | 23 57,5 | 1.07 | 1.035 | 698 | 698,5 | 86222,116 | 86222,293 | 1.752 | 86223,868 | 86224,045 |
| 49,9 | 35 33 | 35 39 | 35 36 | 1.00 | 0.965 | 698 | 698,5 | 86222,116 | 86222,293 | 1.522 | 86223,638 | 86223,815 |
| 49,8 | 47 11 | 47 18 | 47 14,5 | 0.93 | 0.895 | 699 | 698,5 | 86222,470 | 86222,293 | 1.309 | 86223,779 | 86223,602 |
| 50,0 | 58 50 | 58 56 | 58 53 | 0.86 | 0.830 | 699 | 700 | 86222,470 | 86222,823 | 1.122 | 86223,592 | 86223,945 |
| 50,3 | 8 10 29 | 10 37 | 10 33 | 0.80 | 0.770 | 698 | 698,5 | 86222,116 | 86222,293 | 0.969 | 86223,085 | 86223,262 |
| 50,2 | 22 7 | 22 16 | 22 11,5 | 0.74 | 0.720 | 700 | 700 | 86222,823 | 86222,823 | 0.848 | 86223,671 | 86223,671 |
| 50,0 | 34 47 | 34 56 | 34 51,5 | 0 70 | 0.680 | 700 | 700,5 | 86222,823 | 86223,000 | 0.756 | 86223,579 | 86223,756 |
| 50,0 | 45 27 | 45 37 | 45 32 | 0.66 | 0.635 | 701 | 701 | 86223,176 | 86223,176 | 0.659 | 86223,835 | 86223,835 |
| 50,1 | 57 8 | 57 18 | 57 13 | 0.61 | | | | | | | | |
| 50,0 | Mean. | | | | | | | Vibrations in 24 h. at Temp. 50°. | | | 86223,647 | 86223,765 |

P. M. July 10, 1825, Port Bowen. Clock gaining at an assumed rate 69ˢ.88 in 24 h.

Hygr. { Temp. 50°.5. / Dew Pt. 42°.

Barr. { Begg. 29.712 mer. 48°.5. / Endg. 29.713 — 48°.5. } = 29.773 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50,5 | 10 36 35 | 36 38 | 36 36,5 | 1 18 | 1.140 | 697 | 697,5 | 86221,760 | 86221,938 | 2.125 | 86223,885 | 86224,063 |
| 50,5 | 48 12 | 48 16 | 48 14 | 1.10 | 1.060 | 697 | 697,5 | 86221,760 | 86221,938 | 1.837 | 86223,597 | 86223,775 |
| 50,5 | 59 49 | 59 54 | 59 51,5 | 1.02 | 0,985 | 698 | 698,5 | 86222,116 | 86222,293 | 1.586 | 86223,702 | 86223,879 |
| 50,5 | 11 11 27 | 11 33 | 11 30 | 0 95 | 0.915 | 698 | 698,5 | 86222,116 | 86222,293 | 1.369 | 86223,485 | 86223,662 |
| 50,3 | 23 5 | 23 12 | 23 8,5 | 0.88 | 0 850 | 699 | 699 | 86222,470 | 86222,470 | 1.178 | 86223,648 | 86223,648 |
| 50,0 | 34 44 | 34 51 | 34 47,5 | 0.82 | 0.795 | 699 | 699,5 | 86222,470 | 86222,647 | 1.033 | 86223,503 | 86223,680 |
| 50,0 | 46 23 | 46 31 | 46 27 | 0.77 | 0.745 | 700 | 700,5 | 86222,823 | 86223,000 | 0.907 | 86223,730 | 86223,907 |
| 50,1 | 58 3 | 58 12 | 58 7,5 | 0.72 | 0.695 | 702 | 701,5 | 86223,527 | 86223,352 | 0.788 | 86224,315 | 86224,140 |
| 50,2 | 12 9 45 | 9 53 | 9 49 | 0.67 | 0.645 | 699 | 699,5 | 86222,470 | 86222,647 | 0.680 | 86223,150 | 86223,327 |
| 50,3 | 21 24 | 21 33 | 21 28,5 | 0.62 | | | | | | | | |
| 50,29 | Mean. | | | | | | | | | | 86223,668 | 86223,787 |
| 0,29 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.29. | | | + 0,123 | + 0,123 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,791 | 86223,910 |

## *Observation of Coincidences at Port Bowen (2nd Series)—continued.*

P. M. July 10, 1825, Port Bowen. Clock gaining at an assumed rate 69s.88 in 24 h.

Hygr. { Temp. 50°. Dew Pt. 42°.

Barr. { Begg. 29.714 mer. 48°.5. Endg. 29.714 — 49°. } = 29.774 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. Disap. | Interval in seconds of Clock. Disap. & Re-ap. | Observed vibrations in 24 h. Disappearance. | Observed vibrations in 24 h. Mean of Disap. and Re-ap. | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. Disappearance. | Vibra. in 24 h. cor. for Arc. Mean of Disap and Re-ap. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ° | h. m. s. | m. s. | m. s. | | ° | s. | s. | | | vib. | | |
| 49,8 | 12 56 19 | 56 22 | 56 20,5 | 1.21 | 1.165 | 697 | 698 | 86221,760 | 86222,116 | 2.219 | 86223,979 | 86224,335 |
| 49,8 | 1 7 56 | 8 1 | 7 58,5 | 1.12 | 1.080 | 698 | 697,5 | 86222,116 | 86221,938 | 1.907 | 86224,023 | 86223,845 |
| 50,0 | 19 34 | 19 38 | 19 36 | 1.04 | 1.010 | 697 | 698 | 86221,760 | 86222,116 | 1.666 | 86223,426 | 86223,782 |
| 50,0 | 31 11 | 31 17 | 31 14 | 0.98 | 0.950 | 698 | 699,5 | 86222,116 | 86222,647 | 1.476 | 86223,592 | 86224,123 |
| 50,0 | 42 49 | 42 58 | 42 53,5 | 0.92 | 0.885 | 700 | 699 | 86222,823 | 86222,470 | 1.280 | 86224,103 | 86223,750 |
| 50,1 | 54 29 | 54 36 | 54 32,5 | 0.85 | 0.820 | 700 | 700 | 86222,823 | 86222,823 | 1.099 | 86223,922 | 86223,922 |
| 50,5 | 2 6 9 | 6 16 | 6 12,5 | 0.79 | 0.760 | 697 | 698 | 86221,760 | 86222,116 | 0.944 | 86222,704 | 86223,060 |
| 50,7 | 17 46 | 17 55 | 17 50,5 | 0.73 | 0.705 | 699 | 700 | 86222,470 | 86222,823 | 0.812 | 86223,282 | 86223,635 |
| 50,6 | 29 25 | 29 36 | 29 30,5 | 0.68 | 0.655 | 700 | 700 | 86222,823 | 86222,823 | 0.701 | 86223,524 | 86223,524 |
| 50,5 | 41 5 | 41 16 | 41 10,5 | 0.63 | | | | | | | | |
| 50,20 | Mean. | | | | | | | | | | 86223,617 | 86223,775 |
| 0,20 | Diff. to 50°. | | | | | | | Correction for Temp. 0°.20. | | | + 0,086 | + 0,086 |
| | | | | | | | | Vibra. in 24 h. at Temp. 50°. | | | 86223,703 | 86223,861 |

## Table I. (*2nd Series.*)

Times by Clock at Transits of Stars, at Port Bowen, July, 1825.

| Stars. | 6th. | 7th. | 8th. | 9th. | 10th. |
|---|---|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. | h. m. s. | h. m. s. |
| Arcturus . | 4 25 42,54 | 4 22 56,58 | 4 20 10,95 | 4 17 24,54 | 4 14 38,80 |
| α Lyræ . | 8 48 32,41 | 8 45 46,75 | 8 43 00,93 | 8 40 14,81 | 8 37 28,75 |

## Table II.

Transits of Sun. Times by Clock at the moment of Mean Noon.

| 6th. | 8th. | 9th. | 10th. |
|---|---|---|---|
| h. m. s. | h. m. s. | h. m. s. | h. m. s. |
| 9 16 28,54 | 9 18 48,99 | 9 19 59,03 | 9 21 9.36 |

## Table III.

Rates of the Clock by the Stars. (Gaining.)

| Stars. | From 6 to 7 | From 6 to 8 | From 6 to 9 | From 6 to 10 | From 7 to 8 | From 7 to 9 | From 7 to 10 | From 8 to 9 | From 8 to 10 | From 9 to 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. |
| Arcturus ..... | 69.96 | 70.12 | 69.92 | 69.98 | 70.29 | 69.90 | 69.99 | 69.51 | 69.84 | 70.18 |
| $\alpha$ Lyræ ..... | 70.25 | 70.16 | 70.04 | 69.99 | 70.09 | 69.93 | 69.91 | 69.79 | 69.81 | 69.85 |
| Mean ..... | 70.11 | 70.14 | 69.98 | 69.99 | 70.19 | 69.92 | 69.95 | 69.65 | 69.83 | 70.02 |
| Proport$^{n}$. for rate in $3^{m}$ $56^{s}$ | + .19 | + .19 | + .19 | + .19 | + .19 | + .19 | + .19 | + .19 | + .19 | + .19 |
| Rate of the Clock, gaining in a mean solar day... | 70.30 | 70.33 | 70.17 | 70.18 | 70.38 | 70.11 | 70.14 | 69.84 | 70.02 | 70.21 |

## Table IV.

Rates of the Clock by the Sun. (Gaining.)

| From 6 to 8 | From 6 to 9 | From 6 to 10 | From 8 to 9 | From 8 to 10 | From 9 to 10 |
|---|---|---|---|---|---|
| s. | s. | s. | s. | s. | s. |
| 70.22 | 70.16 | 70.20 | 70.04 | 70.18 | 70.33 |

## Table V. *Second Series.*

Vibrations of the Pendulum at Port Bowen, computed at the assumed rate of the Clock, viz. 86469,88 vibrations in a mean solar day.

| Date. | Time of the day. | Barometer. | Thermom. | Vibrations in 24 h. at Temp. 50°. | |
|---|---|---|---|---|---|
| | | | | Disappearance. | Mean of Disap. and Re-ap. |
| | | inches. | o | | |
| July 6th | P. M. | 29,755 | 50,59 | 86223,366 | 86223,524 |
| — | — | ,757 | 50,74 | 86223,445 | 86223,604 |
| 7th | A. M. | 29,749 | 52,83 | 86223,451 | 86223,630 |
| — | — | ,742 | 53,75 | 86223,512 | 86223,652 |
| — | P. M. | ,746 | 52,70 | 86223,473 | 86223,632 |
| — | — | ,756 | 53,09 | 86223,459 | 86223,599 |
| 8th | A. M. | 29,810 | 50,15 | 86223,261 | 86223,379 |
| — | — | ,810 | 49,36 | 86223,282 | 86223,420 |
| — | P. M. | ,812 | 50,36 | 86223,399 | 86223,597 |
| — | — | ,819 | 50,49 | 86223,530 | 86223,688 |
| 9th | A. M. | 29,812 | 51,37 | 86223,616 | 86223,715 |
| — | P. M. | ,811 | 52,75 | 86223,699 | 86223,858 |
| — | — | ,804 | 52,77 | 86223,609 | 86223,769 |
| 10th | A. M. | 29,772 | 49,74 | 86223,525 | 86223,683 |
| — | — | ,771 | 50,00 | 86223,647 | 86223,765 |
| — | P M. | ,773 | 50,29 | 86223,791 | 86223,910 |
| — | — | ,774 | 50,20 | 86223,703 | 86223,861 |
| Mean. | | 29,781 | 51,25 | 86223,516 | 86223,664 |

## Table VI. *Second Series.*

By the Stars.

| July 1825. | | Computed vibrations of the pendulum in 24 h. the clock gaining 69s.88 (assumed rate) in a mean solar day. | | Observed rate of the clock by Stars' transits. | Corrections to vibrations for diff. of rate and 69s.88. | Correct number of vibrations made by the pendulum in a mean solar day at temperature 50o. | | No. of Stars observed. | Interval in days. | Factors. |
|---|---|---|---|---|---|---|---|---|---|---|
| From | To | Disappearance. | Mean of Disap. and Re-ap. | | | Disappearance. | Mean of Disap. and Re-ap. | | | |
| | | | | s. | vib. | | | | | |
| 7th A. M. | 7th P. M. | 86223,474 | 86223,628 | 70,30 | + 0,420 | 86223,894 | 86224,048 | 2 | 1 | 2 |
| | 8th — | 86223,421 | 86223,575 | 70,33 | + 0,450 | 86223,871 | 86224,025 | 2 | 2 | 4 |
| | 9th — | 86223,481 | 86223,631 | 70,17 | + 0,290 | 86223,771 | 86223,921 | 2 | 3 | 6 |
| | 10th — | 86223,530 | 86223,677 | 70,18 | + 0,300 | 86223,830 | 86223,977 | 2 | 4 | 8 |
| 8th A. M. | 8th P. M. | 86223,343 | 86223,521 | 70,38 | + 0,500 | 86223,843 | 86224,021 | 2 | 1 | 2 |
| | 9th — | 86223,485 | 86223,632 | 70,11 | + 0,230 | 86223,715 | 86223,862 | 2 | 2 | 4 |
| | 10th — | 86223,551 | 86223,695 | 70,14 | + 0,260 | 86223,811 | 86223,955 | 2 | 3 | 6 |
| 9th A. M. | 9th P. M. | 86223,641 | 86223,781 | 69,84 | — 0,040 | 86223,601 | 86223,741 | 2 | 1 | 2 |
| | 10th — | 86223,656 | 86223,794 | 70,02 | + 0,140 | 86223,796 | 86223,794 | 2 | 2 | 4 |
| 10th A. M. | 10th P. M. | 86223,666 | 86223,805 | 70,21 | + 0,230 | 86223,896 | 86224,035 | 2 | 1 | 2 |
| Mean | | | | | | 86223,803 | 86223,938 | Sum of Factors | | 40 |

Table VII. *(2nd Series.)*

By the Sun.

| July, 1825. | | Computed vibrations of the pendulum in 24 h. the clock gaining 69s.83 (assumed rate) in a mean solar day. | | Observed rate of the clock by Sun's transits. | Corrections to vibrations for diff. of rate and 69s.88. | Correct number of vibrations made by the pendulum in a mean solar day at temperature 50°. | | No. of Stars observed. | Interval in days. | Factors. |
|---|---|---|---|---|---|---|---|---|---|---|
| From | To | Disappearance. | Mean of Disap and Re-ap. | | | Disappearance. | Mean of Disap. and Re-ap. | | | |
| | | | | s. | vib. | | | | | |
| 6th, P. M. | 8th, A.M. | 86223,406 | 86223,555 | 70.22 | + 0,340 | 86223,746 | 86223,895 | 2 | 2 | 4 |
| | 9th — | 86223,436 | 86223,585 | 70.16 | + 0,280 | 86223,716 | 86223,865 | 2 | 3 | 6 |
| | 10th — | 86223,485 | 86223,634 | 70 20 | + 0,320 | 86223,805 | 86223,954 | 2 | 4 | 8 |
| 8th, P.M. | 9th, A.M. | 86223,515 | 86223,667 | 70.04 | + 0,160 | 86223,675 | 86223,827 | 2 | 1 | 2 |
| | 10th — | 86223,561 | 86223,725 | 70.18 | + 0,300 | 86223,861 | 86224,025 | 2 | 2 | 4 |
| 9th, P.M. | 10th, A.M. | 86223,620 | 86223,769 | 70.33 | + 0,450 | 86224,070 | 86224,219 | 2 | 1 | 2 |
| | | | Mean. | | | 86223,812 | 86223,964 | Sum of Factors | | 26 |

In this series, the number of vibrations made by the pendulum in 24 hours of mean solar time, as obtained from the observations of the disappearance of the white disk, and employing the rates furnished by the transits of stars, is 86223,803, and by the rates, from the sun's transits 86223,812. By the mean of the observations of the disappearance and re-appearance of the disk, the number of vibrations is 86223,938 by the rates, from the stars' transits, and 86223,964 by the transits of the sun. But the sum of the factors for the stars being 40, and for the sun 26, the mean number of vibrations in 24 hours, by the observation of the disappearance of the white disk is 86223,806, and by the mean of its disappearance and re-appearance 86223,948. If to each of these, we apply the corrections, $0^{v},330$ for elevation, and $6^{v},116$ for the buoyancy of the atmosphere, at the mean pressure 29,781 inches, and temperature $51^{\circ},25$ of FAHRENHEIT, we shall arrive at the total number of vibrations which would have been made by the pendulum in a mean solar day, the temperature being 50° of FAHRENHEIT, in vacuo, at the level of the sea at Port Bowen ; and are

By the observation of disappearance - - - 86230,252
By the mean of disappearance and re-appearance - 86230,394

By the first series, the total number of vibrations of the pendulum in 24 hours was

By the observation of disappearance - - 86230,147
By the mean of disappearance and re-appearance 86230,288

The sums of the factors, however, being 275,5 in this series, and only 66 in the second, we obtain for the final number of vibrations at Port Bowen,

By the method of disappearance - - 86230,172

By the mean of disappearance and re-app. 86230,313.

From the above data and number of vibrations made by the same pendulum from the mean of both series at Greenwich, viz.

by the method of disappearance - - 86159,368

and by mean of disappearance and re-app. 86159,500,

together with the *assumed length* of the seconds' pendulum at Greenwich 39,13911 inches; the length of the seconds' pendulum at Port Bowen is found to be nearly 39,203464 inches, by the method of disappearance, and by the mean of disappearance and re-appearance 39,203472 inches; and comparing these with 39,13911 inches, the *assumed length* in lat. 51° 28′ 39″ N. as before stated, the diminution of gravity from the pole to the equator will be by the method of disappearance ,0054152, the ellipticity of the earth $\frac{1}{309,13}$, and the length of the equatorial pendulum 39,009805 inches; and by the mean of disappearance and re-appearance, the diminution of gravity from the pole to the equator will be ,0054159, the ellipticity of the earth $\frac{1}{309,19}$, and the length of the equatorial pendulum 39,009789 inches of Sir GEORGE SCHUCKBURGH'S scale.

The length of the pendulum vibrating seconds, not having been determined at Greenwich, but at Mr. BROWNE'S house in London, it must be remembered that the above *lengths* are not the *true lengths* of the pendulum, but are merely given for the sake of comparison.

## III. *Concluding Series at the Royal Observatory at Greenwich.*

November 1825.

Comparisons of the Clock, with the Observatory Transit Clock.

| Date. | Time by Clock. | Time by the Observatory Clock. | Mean Time at Greenwich. | Clock Slow of Mean Time. |
|---|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. | h. m. s. |
| 7th, A. M. | 2 25 00 | 12 2 31,52 | 8 56 33,44 | 6 31 33,44 |
| — Noon | 5 25 00 | 15 3 1,38 | 11 56 34,06 | 6 31 34,06 |
| — P. M. | 8 34 00 | 18 12 32,95 | 3 5 34,13 | 6 31 34,13 |
| 8th, A. M. | 2 17 29,93 | 11 59 00,00 | 8 49 6,15 | 6 31 36,22 |
| — Noon | 5 33 57,34 | 15 16 00,00 | 0 5 33,85 | 6 31 36,51 |
| — P. M. | 8 24 00 | 18 6 30,86 | 2 55 36,74 | 6 31 36,74 |
| 9th, A. M. | 2 23 00 | 12 8 29,77 | 8 54 38,21 | 6 31 38,21 |
| — Noon | 5 35 00 | 15 21 1,54 | 0 6 38,40 | 6 31 38,40 |
| — P. M. | 8 23 00 | 18 9 29,38 | 2 54 38,60 | 6 31 38,60 |
| 10th, A. M. | 2 25 00 | 12 14 28,64 | 8 56 39,89 | 6 31 39,89 |
| — Noon | 5 36 00 | 15 26 00,22 | 0 7 40,06 | 6 31 40,06 |
| — P. M. | 8 39 00 | 18 29 30,39 | 3 10 40,14 | 6 31 40,14 |
| 11th, A. M. | 2 36 00 | 12 29 28,47 | 9 7 41,16 | 6 31 41,16 |
| — Noon | 5 28 00 | 15 21 56,91 | 11 59 41,32 | 6 31 41,32 |
| — P. M. | 9 13 00 | 19 7 34,24 | 3 44 41,62 | 6 31 41,62 |

From the above Table of Comparisons the following, of rates losing, has been deduced.

| Times of Comparison. | From 7 to 8 | From 7 to 9 | From 7 to 10 | From 7 to 11 | From 8 to 9 | From 8 to 10 | From 8 to 11 | From 9 to 10 | From 9 to 11 | From 10 to 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| | s. | s. | s. | s. | s. | s. | s. | s. | s. | s. |
| A. M... | 2.794 | 2.386 | 2.150 | 1.930 | 1.978 | 1.828 | 1.638 | 1.678 | 1.469 | 1.260 |
| Noon.. | 2.435 | 2.163 | 1.996 | 1.814 | 1.892 | 1.776 | 1.608 | 1.660 | 1.465 | 1.271 |
| P. M... | 2.630 | 2.241 | 2.002 | 1.862 | 1.853 | 1.687 | 1.606 | 1.522 | 1.483 | 1.445 |
| Rate losg in a mean solar day | 2.62 | 2.26 | 2.05 | 1.87 | 1.91 | 1.76 | 1.62 | 1.62 | 1.47 | 1.32 |

## *Observations of Coincidences at Greenwich, November, 1825.*

Height above the level of the sea 181,5 feet.

A. M. November 7th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29.121 mer. 45°. } = 29.115 mean cor. to
{ Endᵍ. 29.125 — 45°. } temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. in 24 h. cor. for Arc | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Mean of Disap. and Re-ap. | | Disappearance. | Mean of Disap. and Re-ap. |
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 43,5 | 3 21 00 | 21 5 | 21 2,5 | 1.16 | 1.120 | 710 | 710 | ..... | ..... | 2.050 | ..... | ..... |
| 43,6 | 32 50 | 32 55 | 32 52,5 | 1.08 | 1.040 | 710 | 711 | ..... | ..... | 1.769 | ..... | ..... |
| 43,8 | 44 40 | 44 47 | 44 43,5 | 1.00 | 0.970 | 711 | 711 | ..... | ..... | 1.538 | ..... | ..... |
| 43,9 | 56 31 | 56 38 | 56 34,5 | 0.94 | 0.910 | 710 | 710,5 | ..... | ..... | 1.353 | ..... | ..... |
| 44,0 | 4 8 21 | 8 29 | 8 25 | 0.88 | 0.855 | 712 | 712 | ..... | ..... | 1.194 | ..... | ..... |
| 44,0 | 20 13 | 20 21 | 20 17 | 0.83 | 0.795 | 711 | 711,5 | ..... | ..... | 1.034 | ..... | ..... |
| 44,2 | 32 4 | 32 13 | 32 8,5 | 0.76 | 0.735 | 712 | 712 | ..... | ..... | 0.882 | ..... | ..... |
| 44,5 | 43 56 | 44 5 | 44 0,5 | 0.71 | 0.685 | 713 | 712,5 | ..... | ..... | 0.766 | ..... | ..... |
| 44,7 | 55 49 | 55 57 | 55 53 | 0.66 | 0.640 | 712 | 713 | ..... | ..... | 0.671 | ..... | ..... |
| 44,9 | 5 7 41 | 7 51 | 7 46 | 0.62 | | | | | | | | |
| 44,11 | Means. | | | | | 711,11 | 711,5 | 86155,135 | 86155,268 | 1.251 | 86156,386 | 86156,5 |

P. M. November 7th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29.125 mer. 45°.5. } = 29.126 mean cor. to
{ Endᵍ. 29.144 — 46°.2. } temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | 6 29 36 | 29 43 | 29 39,5 | 1.16 | 1.120 | 709 | 707,5 | ..... | ..... | 2.050 | ..... | ..... |
| 46 | 41 25 | 41 29 | 41 27 | 1.08 | 1.040 | 706 | 707 | ..... | ..... | 1.769 | ..... | ..... |
| 46 | 53 11 | 53 17 | 53 14 | 1.00 | 0.965 | 708 | 708,5 | ..... | ..... | 1.523 | ..... | ..... |
| 46 | 7 4 59 | 5 6 | 5 2,5 | 0.93 | 0.900 | 708 | 708,5 | ..... | ..... | 1.324 | ..... | ..... |
| 46 | 16 47 | 16 55 | 16 51 | 0.87 | 0.840 | 709 | 709,5 | ..... | ..... | 1.154 | ..... | ..... |
| 46,2 | 28 36 | 28 45 | 28 40,5 | 0.81 | 0.780 | 709 | 709 | ..... | ..... | 0.996 | ..... | ..... |
| 46,4 | 40 25 | 40 34 | 40 29,5 | 0.75 | 0.720 | 709 | 710 | ..... | ..... | 0.846 | ..... | ..... |
| 46,3 | 52 14 | 52 25 | 52 19,5 | 0.69 | 0.665 | 710 | 710 | ..... | ..... | 0.722 | ..... | ..... |
| 46,2 | 8 4 4 | 4 15 | 4 9,5 | 0.64 | 0.620 | 710 | 711 | ..... | ..... | 0.628 | ..... | ..... |
| 46,2 | 15 54 | 16 7 | 16 0,5 | 0.60 | | | | | | | | |
| 46,13 | Means. | | | | | 708,667 | 709,0 | 86154,297 | 86154,412 | 1.224 | 86155,521 | 86155,6 |

## *Observations of Coincidences at Greenwich—continued.*

Height above the level of the sea 181,5 feet.

A. M. November 8th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barr. { Begg. 29.251 mer. 39°.5. } = 29.200 mean cor. to
{ Endg. .163 — 42°.0. } temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Mean of Disap. and Re-ap. | | Disappearance | Mean of Disap. and Re-ap. |
| o | h. m. s. | m. s. | m. s. | o | o | s. | s. | | | vib. | | |
| 40,0 | 3 27 28 | 27 33 | 27 30,5 | 1.18 | 1.135 | 712 | 712 | ..... | ..... | 2.106 | ..... | ..... |
| 40,2 | 39 20 | 39 25 | 39 22,5 | 1.09 | 1.055 | 712 | 713 | ..... | ..... | 1.820 | ..... | ..... |
| 40,6 | 51 12 | 51 19 | 51 15,5 | 1.02 | 0.985 | 714 | 714 | ..... | ..... | 1.587 | ..... | ..... |
| 40,9 | 4 3 6 | 3 13 | 3 9,5 | 0.95 | 0.915 | 713 | 713,5 | ..... | ..... | 1.368 | ..... | ..... |
| 41,0 | 14 59 | 15 7 | 15 3 | 0.88 | 0.850 | 714 | 714 | ..... | ..... | 1.181 | ..... | ..... |
| 41,0 | 26 53 | 27 1 | 26 57 | 0.82 | 0.785 | 713 | 714,5 | ..... | ..... | 1.009 | ..... | ..... |
| 41,2 | 38 46 | 38 57 | 38 51,5 | 0.75 | 0.725 | 714 | 714 | ..... | ..... | 0.857 | ..... | ..... |
| 41,9 | 50 40 | 50 51 | 50 45,5 | 0.70 | 0.675 | 713 | 713,5 | ..... | ..... | 0.744 | ..... | ..... |
| 42,1 | 5 2 33 | 2 45 | 2 39 | 0.65 | 0.630 | 715 | 714,5 | ..... | ..... | 0.649 | ..... | ..... |
| 42,1 | 14 28 | 14 39 | 14 33,5 | 0.61 | | | | | | | | |
| 41,1 | Means. | | | | | 713,333 | 713,667 | 86155,892 | 86156,005 | 1.258 | 86157,150 | 86157,263 |

P. M. November 8th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barr. { Begg. 29.104 mer. 42°.8. } = 29.058 mean cor. to
{ Endg. .029 — 45°. } temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43,1 | 6 26 34 | 26 40 | 26 37 | 1.14 | 1.095 | 710 | 709 | ..... | ..... | 1.961 | ..... | ..... |
| 43,2 | 38 24 | 38 28 | 38 26 | 1.05 | 1.015 | 708 | 709,5 | ..... | ..... | 1.684 | ..... | ..... |
| 43,2 | 50 12 | 50 19 | 50 15,5 | 0.98 | 0.945 | 710 | 711 | ..... | ..... | 1.461 | ..... | ..... |
| 43,7 | 7 2 2 | 2 11 | 2 6,5 | 0.91 | 0.880 | 710 | 710 | ..... | ..... | 1.266 | ..... | ..... |
| 44,0 | 13 52 | 14 1 | 13 56,5 | 0.85 | 0.825 | 710 | 709,5 | ..... | ..... | 1.111 | ..... | ..... |
| 44,2 | 25 42 | 25 50 | 25 46 | 0.80 | 0.775 | 710 | 710,5 | ..... | ..... | 0.981 | ..... | ..... |
| 44,5 | 37 32 | 37 41 | 37 36,5 | 0.75 | 0.725 | 708 | 709 | ..... | ..... | 0.858 | ..... | ..... |
| 44,8 | 49 20 | 49 31 | 49 25,5 | 0.70 | 0.675 | 712 | 711 | ..... | ..... | 0.745 | ..... | ..... |
| 45,0 | 8 1 12 | 1 21 | 1 16,5 | 0.65 | 0.625 | 708 | 709 | ..... | ..... | 0.638 | ..... | ..... |
| 45,5 | 13 00 | 13 11 | 13 5,5 | 0.60 | | | | | | | | |
| 44,12 | Means. | | | | | 709,556 | 709,833 | 86154,603 | 86154,698 | 1.189 | 86155,792 | 86155,887 |

## *Observations of Coincidences at Greenwich—continued.*

Height above the level of the sea 181,5 feet.

A. M. November 9th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 28,969 mer. 44°.5. } = 28,973 mean cor.
{ Endᵍ. 29,000 — 46°.0. } to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. in 24 h. cor. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Mean of Disap. and Re-ap. | | Disappearance. | Mean of Disap. and Re-ap. |
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 44,8 | 3 17 52 | 17 57 | 17 54,5 | 1.13 | 1.090 | 706 | 706,5 | ..... | ..... | 1.943 | ..... | ..... |
| 44,9 | 29 38 | 29 44 | 29 41 | 1.05 | 1.015 | 704 | 705,5 | ..... | ..... | 1.684 | ..... | ..... |
| 45,0 | 41 22 | 41 31 | 41 26,5 | 0.98 | 0.945 | 707 | 706,5 | ..... | ..... | 1.461 | ..... | ..... |
| 45,2 | 53 9 | 53 17 | 53 13 | 0.91 | 0.875 | 707 | 707,5 | ..... | ..... | 1.250 | ..... | ..... |
| 45,7 | 4 4 56 | 5 5 | 5 00,5 | 0.84 | 0.810 | 706 | 707 | ..... | ..... | 1.072 | ..... | ..... |
| 45,9 | 16 42 | 16 53 | 16 47,5 | 0.78 | 0.755 | 707 | 706,5 | ..... | ..... | 0.931 | ..... | ..... |
| 46,0 | 28 29 | 28 39 | 28 34 | 0.73 | 0,705 | 707 | 707,5 | ..... | ..... | 0.812 | ..... | ..... |
| 46,1 | 40 16 | 40 27 | 40 21,5 | 0.68 | 0.655 | 708 | 708 | ..... | ..... | 0.701 | ..... | ..... |
| 46,5 | 52 4 | 52 15 | 52 9,5 | 0.63 | 0.610 | 706 | 707 | ..... | ..... | 0.608 | ..... | ..... |
| 46,8 | 5 3 50 | 4 3 | 3 56,5 | 0.59 | | | | | | | | |
| 45,69 | Means. | | | | | 706,444 | 706,889 | 86153,530 | 86153,684 | 1.162 | 86154,692 | 86154,846 |

P. M. November 9th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29,016 mer. 47°.5. } = 29,023 mean cor
{ Endᵍ. 29,050 — 47°. } to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 47,7 | 6 25 10 | 25 15 | 25 12,5 | 1.13 | 1.090 | 702 | 702 | ..... | ..... | 1.943 | ..... | ..... |
| 47,8 | 36 52 | 36 57 | 36 54,5 | 1.05 | 1.015 | 702 | 704 | ..... | ..... | 1.684 | ..... | ..... |
| 47,7 | 48 34 | 48 43 | 48 38,5 | 0.98 | 0.950 | 705 | 704,5 | ..... | ..... | 1.476 | ..... | ..... |
| 47,7 | 7 00 19 | 00 27 | 00 23 | 0.92 | 0.885 | 705 | 704,5 | ..... | ..... | 1.281 | ..... | ..... |
| 47,6 | 12 4 | 12 11 | 12 7,5 | 0.85 | 0.820 | 705 | 705,5 | ..... | ..... | 1.099 | ..... | ..... |
| 47,6 | 23 49 | 23 57 | 23 53 | 0.79 | 0.760 | 705 | 706,5 | ..... | ..... | 0.943 | ..... | ..... |
| 47,7 | 35 34 | 35 45 | 35 39,5 | 0.73 | 0.705 | 706 | 706 | ..... | ..... | 0.812 | ..... | ..... |
| 47,3 | 47 20 | 47 31 | 47 25,5 | 0.68 | 0 650 | 706 | 707 | ..... | ..... | 0.691 | ..... | ..... |
| 47,0 | 59 6 | 59 19 | 59 12,5 | 0.62 | 0.600 | 708 | 707 | ..... | ..... | 0.589 | ..... | ..... |
| 47,0 | 8 10 54 | 11 5 | 10 59,5 | 0.58 | | | | | | | | |
| 47,51 | Means. | | | | | 704,889 | 705,222 | 86152,990 | 86153,106 | 1.169 | 86154,159 | 86154,275 |

## *Observations of Coincidences at Greenwich—continued.*

Height above the level of the sea 181,5 feet.

A. M. November 10th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barr. { Begs. 28.640 mer. 43°.5. / Ends. 28.620 — 44°.5. } = 28.613 mean cor. to temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. corr. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Mean of Disap. and Re-app. | | Disappearance. | Mean of Disap. and Re-app. |
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 44,0 | 3 19 1 | 19 8 | 19 4,5 | 1.10 | 1.060 | 706 | 706 | ..... | ..... | 1.837 | ..... | ..... |
| 44,0 | 30 47 | 30 54 | 30 50,5 | 1.02 | 0.980 | 706 | 706 | ..... | ..... | 1.572 | ..... | ..... |
| 44,1 | 42 33 | 42 40 | 42 36,5 | 0.94 | 0.910 | 706 | 707 | ..... | ..... | 1.353 | ..... | ..... |
| 44,1 | 54 19 | 54 28 | 54 23,5 | 0.88 | 0.850 | 707 | 707,5 | ..... | ..... | 1.181 | ..... | ..... |
| 44,1 | 4 6 6 | 6 16 | 6 11 | 0.82 | 0.790 | 706 | 707,5 | ..... | ..... | 1.021 | ..... | ..... |
| 44,2 | 17 52 | 18 5 | 17 58,5 | 0.76 | 0.740 | 709 | 708 | ..... | ..... | 0.896 | ..... | ..... |
| 44,3 | 29 41 | 29 52 | 29 46,5 | 0.72 | 0.700 | 706 | 707,5 | ..... | ..... | 0.801 | ..... | ..... |
| 44,4 | 41 27 | 41 41 | 41 34 | 0.68 | 0.655 | 708 | 708,5 | ..... | ..... | 0.702 | ..... | ..... |
| 44,5 | 53 15 | 53 30 | 53 22,5 | 0.63 | 0.605 | 710 | 709 | ..... | ..... | 0.598 | ..... | ..... |
| 44,8 | 5 5 5 | 5 18 | 5 11,5 | 0.58 | | | | | | | | |
| 44,25 | Means. | | | | | 707,111 | 707,444 | 86153,761 | 86153,876 | 1.107 | 86154,868 | 86154,983 |

P. M. November 10th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barr. { Begs. 28,617 mer. 45°. / Ends. 28,613 — 45°. } = 28,597 mean cor. to temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 45,2 | 6 31 10 | 31 16 | 31 13 | 1.16 | 1.120 | 703 | 703,5 | ..... | ..... | 2.051 | ..... | ..... |
| 45,2 | 42 53 | 43 00 | 42 56,5 | 1.08 | 1.050 | 705 | 705 | ..... | ..... | 1.803 | ..... | ..... |
| 45,2 | 54 38 | 54 45 | 54 41,5 | 1.02 | 0.980 | 705 | 706 | ..... | ..... | 1.572 | ..... | ..... |
| 45,2 | 7 6 23 | 6 32 | 6 27,5 | 0.94 | 0.910 | 706 | 706 | ..... | ..... | 1.353 | ..... | ..... |
| 45,2 | 18 9 | 18 18 | 18 13,5 | 0.88 | 0.850 | 706 | 706 | ..... | ..... | 1.181 | ..... | ..... |
| 45,2 | 29 55 | 30 4 | 29 59,5 | 0.82 | 0.780 | 705 | 707 | ..... | ..... | 0.996 | ..... | ..... |
| 45,2 | 41 40 | 41 53 | 41 46,5 | 0.74 | 0.710 | 706 | 706 | ..... | ..... | 0.823 | ..... | ..... |
| 45,2 | 53 26 | 53 39 | 53 32,5 | 0.68 | 0.655 | 707 | 707 | ..... | ..... | 0.702 | ..... | ..... |
| 45,2 | 8 5 13 | 5 26 | 5 19,5 | 0.63 | 0.605 | 706 | 707 | ..... | ..... | 0.598 | ..... | ..... |
| 45,2 | 16 59 | 7 14 | 17 6,5 | 0.58 | | | | | | | | |
| 45,2 | Means. | | | | | 705,444 | 705,944 | 86153,183 | 86153,357 | 1.231 | 86154,414 | 86154,588 |

## *Observations of Coincidences at Greenwich—continued.*

Height above the level of the sea 181,5 feet.

A. M. November 11th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29.273 mer. 42°. } = 29.280 mean cor. to
{ Endᵍ. 29.300 — 43°. } temp. of pend.

| Temp. | Time of Disappearance. | Time of Re-appearance. | Mean of Disappearance and Re-appearance. | Arc of vibration. | Mean Arc. | Interval in seconds of Clock. | | Observed vibrations in 24 h. | | Correct. for Arc. | Vibra. corr. for Arc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Disap. | Disap. & Re-ap. | Disappearance. | Mean of Disap. and Re-ap. | | Disappearance. | Mean of Disap. and Re-ap. |
| ° | h. m. s. | m. s. | m. s. | ° | ° | s. | s. | | | vib. | | |
| 42,0 | 3 14 45 | 14 48 | 14 46,5 | 1.14 | 1.095 | 706 | 707,5 | ..... | ..... | 1.961 | ..... | ..... |
| 42,0 | 26 31 | 26 37 | 26 34 | 1.05 | 1.010 | 708 | 708 | ..... | ..... | 1.668 | ..... | ..... |
| 42,1 | 38 19 | 38 25 | 38 22 | 0.97 | 0.935 | 708 | 708,5 | ..... | ..... | 1.431 | ..... | ..... |
| 42,4 | 50 7 | 50 14 | 50 10,5 | 0.90 | 0.870 | 709 | 709,5 | ..... | ..... | 1.237 | ..... | ..... |
| 42,7 | 4 1 56 | 2 4 | 2 00 | 0.84 | 0.810 | 708 | 708,5 | ..... | ..... | 1.072 | ..... | ..... |
| 42,9 | 14 44 | 14 53 | 14 48,5 | 0.78 | 0.750 | 711 | 710,5 | ..... | ..... | 0.919 | ..... | ..... |
| 42,9 | 25 35 | 25 43 | 25 39 | 0.72 | 0.700 | 708 | 709,5 | ..... | ..... | 0.801 | ..... | ..... |
| 42,9 | 37 23 | 37 34 | 37 28,5 | 0.68 | 0.655 | 710 | 710,5 | ..... | ..... | 0.701 | ..... | ..... |
| 43,0 | 49 13 | 49 25 | 49 19 | 0.63 | 0.605 | 710 | 709,5 | ..... | ..... | 0.598 | ..... | ..... |
| 43,0 | 5 1 3 | 1 14 | 1 8,5 | 0.58 | | | | | | | | |
| 42,59 | Means. | | | | | 708,667 | 709,111 | 86154,297 | 86154,450 | 1.154 | 86155,451 | 86155,604 |

P. M. November 11th, 1825, Royal Observatory.
Clock losing at a mean rate 1ˢ.87 per diem.

Barʳ. { Begᵍ. 29.302 mer. 43°. } = 29.312 mean cor. to
{ Endᵍ. 29.333 — 45°. } temp. of pend.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44,5 | 5 37 54 | 37 57 | 37 55,5 | 1.15 | 1.110 | 705 | 706,5 | ..... | ..... | 2.014 | ..... | ..... |
| 44,2 | 49 39 | 49 45 | 49 42 | 1.07 | 1.030 | 705 | 705,5 | ..... | ..... | 1.733 | ..... | ..... |
| 44,2 | 6 1 24 | 1 31 | 1 27,5 | 0.99 | 0.955 | 707 | 707,5 | ..... | ..... | 1.491 | ..... | ..... |
| 44,4 | 13 11 | 13 19 | 13 15 | 0.92 | 0.880 | 705 | 707 | ..... | ..... | 1.266 | ..... | ..... |
| 44,4 | 24 56 | 25 8 | 25 2 | 0.84 | 0.810 | 709 | 707,5 | ..... | ..... | 1.072 | ..... | ..... |
| 44,3 | 36 45 | 36 54 | 36 49,5 | 0.78 | 0.750 | 708 | 708 | ..... | ..... | 0.919 | ..... | ..... |
| 44,2 | 48 33 | 48 42 | 48 37,5 | 0.72 | 0.700 | 708 | 709 | ..... | ..... | 0.801 | ..... | ..... |
| 44,3 | 7 00 21 | 00 32 | 00 26,5 | 0.68 | 0 655 | 708 | 708 | ..... | ..... | 0.701 | ..... | ..... |
| 44,3 | 12 9 | 12 20 | 12 14,5 | 0.63 | 0.605 | 708 | 709 | ..... | ..... | 0.598 | ..... | ..... |
| 44,4 | 23 57 | 24 10 | 24 3,5 | 0.58 | | | | | | | | |
| 44,32 | Means. | | | | | 707,0 | 707,556 | 86153,722 | 86153,914 | 1.177 | 86154,899 | 86155,091 |

Vibrations of the Pendulum at the Royal Observatory at Greenwich, November 1825.

The Clock making 86398,13 vibrations in a mean solar day at a mean rate.

| Date. | Barom. | Ther. | Diff. Temp. & 50 | Vibra. in 24 h. cor. for Arc by | | Correction for Temp. | Vibra. of pend. in 24 h. at temp. of 50° by | |
|---|---|---|---|---|---|---|---|---|
| | | | | Disappearance. | Mean of Disap. and Re-ap. | | Disappearance. | Mean of Disap. and Re-ap. |
| | Inches. | o | o | | | vib. | | |
| Nov. 7th A.M. | 29.115 | 44.11 | 5.89 | 86156,386 | 86156,519 | — 2.491 | 86153,895 | 86154,028 |
| — P.M. | 29.126 | 46.13 | 3.87 | 86155,521 | 86155,636 | — 1.637 | 86153,884 | 86153,999 |
| 8 A.M. | 29.200 | 41.10 | 8.90 | 86157,150 | 86157,263 | — 3.765 | 86153,385 | 86153,498 |
| — P.M. | 29.058 | 44.12 | 5.88 | 86155,792 | 86155,887 | — 2.487 | 86153,305 | 86153,400 |
| 9 A.M. | 28.973 | 45.69 | 4.31 | 86154,692 | 86154,846 | — 1.823 | 86152,869 | 86153,023 |
| — P.M. | 29.023 | 47.51 | 2.49 | 86154,159 | 86154,275 | — 1.053 | 86153,106 | 86153,222 |
| 10 A.M. | 28.613 | 44.25 | 5.75 | 86154,868 | 86154,983 | — 2.432 | 86152,436 | 86152,551 |
| — P.M. | 28.597 | 45.20 | 4.80 | 86154,414 | 86154,588 | — 2.030 | 86152,384 | 86152,558 |
| 11 A.M. | 29.280 | 42.59 | 7.41 | 86155,451 | 86155,604 | — 3.134 | 86152,317 | 86152,470 |
| — P.M. | 29.312 | 44.32 | 5.68 | 86154,899 | 86155,091 | — 2.403 | 86152,496 | 86152,688 |
| Mean. | 29.297 | 44.50 | | | | | 86153,008 | 86153,144 |

## Results.

| From | To | Correct number of vibrations of pend. in a mean solar day. | |
|---|---|---|---|
| | | Disappearances. | Mean of Disap, and Re-ap. |
| Nov. 7th A. M. | Nov. 8th P. M. | 86152,867 | 86152,981 |
| ——— | 9th P. M. | 86153,017 | 86153,138 |
| ——— | 10th P. M. | 86152,978 | 86153,105 |
| ——— | 11th P. M. | 86153,008 | 86153,144 |
| 8th A. M. | 9th P. M. | 86153,126 | 86153,246 |
| ——— | 10th P. M. | 86153,024 | 86153,152 |
| ——— | 11th P. M. | 86153,037 | 86153,176 |
| 9th A. M. | 10th P. M. | 86152,949 | 86153,088 |
| ——— | 11th P. M. | 86153,001 | 86153,152 |
| 10th A. M. | 11th P. M. | 86152,958 | 86153,117 |
| | Mean..... | 86152,996 | 86153,130 |
| | Correction for buoyancy..... | + 6,041 | + 6,041 |
| | ——— elevation ..... | + 0,450 | + 0,450 |
| | Final No. of vibra. in vacuo at the level of the sea, temp. 50°. (Fah.) | 86159,487 | 86159,621 |

By this experiment, it appears that the final number of vibrations which would have been made by the pendulum at Greenwich in 24 mean solar hours at the level of the sea, in vacuo, and at the temperature of 50° of FAHRENHEIT, by the

method of disapp. of the white disk is - 86159,487
and by the mean of its disapp. and re-app. 86159,621

But from the final results deduced from the experiment made at Greenwich in April 1824, previous to leaving England, the total number of vibrations which would have been made by the same pendulum under the above circumstances, by the

method of disappearance, was - - - 86159,250
and by the mean of disapp. and re-app. - 86159,380

Having already stated, what I have considered to be the cause of the difference in the number of vibrations of the pendulum in these experiments; the following arithmetical means of the results of the series in April 1824, and November 1825, are to be considered as the proper number of vibrations of the pendulum, at Greenwich, to be compared with those obtained at Port Bowen, and are by the method of

disappearance of the white disk - 86159,368
and by the mean of its disapp. and re-app. 86159,500.

II. *Observations on the diurnal variation of the magnetic needle, at the Whale Fish Islands, Davis's Strait. By Lieutenant* Henry Foster, *R. N. F. R. S.*

Previous to leaving England in the spring of 1824, I had determined upon making a series of observations on the daily variation of the magnetic needle, during our stay, at the different places which might be visited by the Expedition. Accordingly, soon after our arrival at the Whale Fish Islands, for the purpose of transhipping the stores from the Transport which had accompanied us thus far; the instrument for observing the diurnal variation was landed, and placed on a pedestal in a small octagonal observatory.

The length of the needle was 11 inches, and weighed 120 grains; it rested on a pivot; and its direction when the *sun* was on the magnetic meridian I assumed, for distinction's sake, the zero of my scale. The observations were continued for three days only; and as the brass work of the instrument was afterwards found to be magnetic, the results obtained are, of course, too doubtful to be considered of any great value taken singly; but as it was these observations which first indicated to me the agency of the *sun*, in producing the interesting phenomenon of the daily variation, I have thought it right to give them in detail, together with such remarks as occurred to me at this early stage of the enquiry, as preliminary to the more extended and exact observations made at Port Bowen by Captain Parry, the other Officers of the Expedition, and myself, an account of which accompanies this communication to the Royal Society.

Observations on the daily variation of the magnetic needle at the Whale Fish Islands, June 1824. Variation 70° 2′ W.

| June 29th. Instrument adjusted when ⊙ was on mag$^{t}$. meridian. | | | | | | | June 30th. Instrument re-adjusted when ⊙ was on mag$^{t}$. meridian. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apparent Time of Observation. | Temperature. Inst. | Temperature. Air. | Barometer. | Reading of south end of needle. | Direction of south end of needle. | Remarks, &c. | Apparent Time of Observation. | Temperature. Inst. | Temperature. Air. | Barometer. | Reading of south end of needle. | Direction of south end of needle. | Remarks &c. |
| h. m. | + o | + o | inches. | o ′ ″ | | | h. m. | + o | + o | inches. | o ′ ″ | | |
| A. M. 7 35 | 49 | 45 | | 4 14 00 | South end of needle going to the eastward. | ⊙ on magnetic meridian. | A. M. 7 30 | 52 | 46 | | 4 10 30 | South end of the needle drawn to the eastward. | ⊙ on magnet meridia |
| 10 10 | 55 | 45 | 30,00 | 20 15 | | | 10 10 | 53 | 46 | 29,94 | 7 30 | | |
| 11 10 | 56½ | 45 | ..... | 20 15 | | | 11 10 | 53 | 47 | ..... | 26 30 | | |
| P.M. 12 10 | 56¾ | 45 | ..... | 22 00 | | | P.M. 12 10 | 53 | 47 | ..... | 29 30 | | |
| 1 10 | 57 | 45 | ..... | 29 00 | | 15′ max. | 1 20 | 53½ | 47 | ..... | 30 30 | | 23′ max |
| 2 10 | 56 | 47 | ..... | 23 00 | South end going to the westward. | westerly | 2 20 | 54 | 47 | ..... | 24 00 | South end of needle going to the westward. | westerl |
| 3 10 | 56 | 47 | 30,02 | 19 30 | | variation. | 3 10 | 56 | 47 | 29,91 | 20 00 | | variatio |
| 4 10 | 57 | 47 | ..... | 21 00 | | ⊙ west by compass. | 4 10 | 55 | 46 | ..... | 9 00 | | ⊙ west b compass |
| 5 10 | 58 | 46 | ..... | 21 00 | | | | | | ..... | | | |
| 6 47 | 65 | 45 | ..... | 19 00 | | | 6 46 | 56½ | 45 | ..... | 12 00 | | Cloudy |
| 7 10 | 57 | 44 | ..... | 19 00 | Needle unsettled. | ⊙ on mag. meridian. | 7 10 | 54 | 44 | ..... | 8 30 | | weather |
| 8 10 | 56 | 42 | ..... | 19 00 | | | 8 10 | 49 | 43½ | ..... | 9 30 | | |
| 9 10 | 57 | 41 | 30,00 | 13 00 | | | 9 10 | 49 | 43 | 29,98 | 13 00 | | SSE win |
| 10 10 | 56 | 41 | ..... | 17 00 | | Light airs and fine weather. | 10 10 | 46 | 42 | ..... | 9 30 | | with rai |
| 11 10 | 47 | 40 | ..... | 19 00 | | | 11 10 | 43½ | 42 | ..... | 9 30 | | |
| Mid$^{t}$ 12 10 | 45½ | 40 | ..... | 17 00 | | | Mid. 12 10 | 42 | 41½ | ..... | 9 30 | | |

| July 1st. | | | | | | |
|---|---|---|---|---|---|---|
| Apparent Time of Observation. | Temperature. Inst. | Temperature. Air. | Barometer. | Reading of south end of needle. | Direction of south end of needle. | Remarks, &c. |
| h. m. | + o | + o | inches. | o ′ ″ | | |
| A. M. 7 30 | 44 | 42½ | | 4 10 00 | South end of needle drawn to the east. | ⊙ on mag. mer. |
| 10 30 | 42 | 39 | 29,97 | 8 30 | | |
| 11 10 | 43 | 39 | ..... | 12 30 | | 23′ 30″ max. W. var. |
| P.M. 12 10 | 43 | 39 | ..... | 10 00 | | |
| 1 10 | 44 | 40 | ..... | 23 30 | S. end to the westward. | |
| 2 10 | 45 | 40 | ..... | 8 00 | | ⊙ west by compass. |
| 3 10 | 46 | 44 | 29,98 | 00 00 | | |

Here the observations were interrupted by the re-shipment of the instruments preparatory to the departure of the expedition.

From these observations it appears, that the maximum westerly variation happened about a quarter past one o'clock P. M. at which time the sun was nearly west by compass. The observations, however, were not continued after midnight; consequently the time of maximum easterly could not be determined, nor the total amount of the daily variation.

III. *Magnetical Observations at Port Bowen, &c. A. D.* 1824-25, *comprehending observations on the diurnal variation and diurnal intensity of the horizontal needle; also on the Dip of the magnetic needle at Woolwich, and at different stations, within the Arctic circle. By Captain* W. E. Parry, *F. R. S. and Lieutenant* Henry Foster, *F. R. S.*

The daily variation of the horizontal needle was first observed in London by Mr. Graham, in the year 1722; but in consequence of its small amount, it has always been considered amongst the minor phenomena which the magnetic needle presents. Mr. Barlow, however, having explained a method of encreasing the amount of this daily change very considerably, in any latitude,* this phenomenon began to assume a different character, and seemed to furnish a subject of highly interesting, if not of useful, enquiry.

Therefore, soon after our arrival at Port Bowen, an attempt was made to obtain the diurnal variation of the magnetic needle at this place, with an instrument constructed by Mr. Dollond for that purpose, and which had been used at the Whale Fish Islands. But the weight of the needle occasioned so much friction on the point of support, that no movement could be detected; and after several trials, which it is unnecessary here to detail, (and in the course of which it was discovered that the brass composing the instrument was in every part highly magnetic) it was wholly laid aside as useless in these latitudes.

* Phil. Trans. for 1823.

The needles, distinguished by Nos. 1 and 2 in the following tables were *suspended*, instead of *supported*, and were contained within a small wooden box having a glass cover. The centre of each was made exactly to coincide with the centre of motion of the index of a common HADLEY'S quadrant, graduated to minutes as usual, the box being fixed upon the index and moving with it. The agate cup of each needle was just allowed to touch a fine steel point of support, in order to preserve their correct centres. No. 1 needle belonged to an azimuth compass on Capt. KATER'S construction, its lozenge shape being that figured in the Appendix to the Voyage of 1819-20, p. cix; except that this needle was rounded at the corners forming the extremities of its transverse diameter. Its weight (with the addition of mica ends increasing its length to eight inches for the purpose of more accurate observation) was 104 grains, that of the needle alone being 50 grains.

No. 2 needle was formed of clock spring, and furnished by Mr. CHRISTIE, for some experiments to be made with it under the influence of magnets. Its shape has been already described by that gentleman in his paper on this subject, in the Philosophical Transactions for the year 1823.

The length of this needle was 4,9 inches, but increased by mica ends to about ten inches, in which state it weighed 96 grains, that of the needle alone being 51 grains.

Both these needles were delicately suspended by a few fine threads of floss silk, from seven to eight inches in length, having no torsion, and passing up through a copper cylinder over a small brass pulley. A leaden weight just equivalent to that of the needle was then attached to the

other end of the silk, in order to adjust it so that it might barely touch the centre or point of support.

No. 3 needle, which was that of a common ship's azimuth compass, and weighed 146 grains, was suspended like the other two, but simply contained within an air-tight box having glass ends. A sight of card paper being fixed towards each extremity of the needle, the amount of variation was obtained, by observing the coincidence of the sights through a small telescope traversing upon an arc of ten fee radius, and consequently placed at that distance from the needle. A vernier attached to the telescope, and moving with it, gave the reading to the nearest minute. This needle was afterwards used exclusively for obtaining the changes in the magnetic intensity, for which it was found remarkably well adapted; the instant of the coincidence of the two sights being easily observable through the telescope to two-tenths of a second, by means of a chronometer held to the ear. During the absence of daylight, these observations were made by candlelight, transmitted through a sheet of oiled paper, fixed against the glass end of the box, farthest from the observer.

The observations were made at the commencement by Lieutenant Foster and Captain Parry, but were subsequently carried on in regular watches, and the needles visited every hour during four successive months, by Lieutenants Sherer and Ross, and Messieurs Crozier, Richards and Head. When any extraordinary change, however, appeared to be going on, the needles were more closely watched; and every phenomenon, such as the aurora borealis, meteors, clouds, the kind and degree of light, the moon's position, and the temperature within and without, were at all times care-

fully noted. In the following tables these phenomena, with the exception of the temperature, have necessarily been omitted, on account of the great length to which their insertion would have extended this communication; but an abstract of all the particulars relative to one of the needles, No. 2, has been made by Lieutenant FOSTER, and is given in continuation of this series; diagrams exhibiting graphically the various deflections of needle No. 1, for which we are indebted to the ingenuity of Mr. HOOPER, are also subjoined.

The original register of the whole is preserved and can easily be referred to, should any of the observed phenomena, beyond those which are here given, be considered likely to have influenced the motion of the needles. As far, however, as our own observations extended, we have reason to believe that on no occasion were the needles in the slightest degree affected, either by the aurora, meteors, or any other perceptible atmospheric phenomenon.

Soon after the observations were commenced, it was ascertained that twice in every four and twenty hours the needles moved past a certain point, which may be denominated the zero, or mean magnetic meridian; a fact, which was first rendered clearly apparent, from the accompanying diagrams already mentioned, by which it appears that in every instance except one, both needles every day passed the line in question. On a single day, February 24, the needle No. 2 did not arrive at it during its eastern motion.

The means of the times of the needle passing this zero, as deduced from four months continued observations, is, $6^h\,15^m$ A. M., and $4^h\,37^m$ P. M.; the mean time in each month being as follows:

| 1825 | A. M. | P. M. |
|---|---|---|
| January - - - | $6^h\,00^m$ | $4^h\,00^m$ |
| February - - | 6 30 | 4 00 |
| March - - - | 5 30 | 5 00 |
| April - - - - | 7 00 | 5 30 |
| Mean | 6 15 | 4 37 |

To avoid the insertion of many useless figures in the tables, the resulting *amount of easterly or westerly deflection on each side of the zero has been computed.*

The maximum westerly variation at Port Bowen appears, from these observations, generally to have occurred between the hours of $10^h$ A. M. and $1^h$ P. M., the mean result of one hundred and twenty days' observations being $11^h\,49^m$ A. M. The minimum westerly variation, or the greatest deflection of the north end of the needle to the eastward, took place between $8^h$ P. M. and $2^h$ A. M., the mean time, deduced as above, being $10^h\,1^m$ P. M.

In a few instances the maximum deflection of the needle to the westward occurred as early as $8^h$ A. M., and as late as $3^h$ P. M.; and in like manner, the greatest deflection eastward took place at $2^h$ and $3^h$ P. M., on some few occasions. In all these anomalous cases, however, it was remarked, from simultaneous observations on the times of vibration of a suspended horizontal needle, that these irregularities were evidently due to an extraordinary alteration in its intensity, which produced a deflection contrary to the regular order of the motion of the needle.

The diurnal change of direction appears, by these observations, to have been seldom less than one degree, and sometimes to have amounted to 5, 6, and even 7 degrees, and there can be no doubt that the changes in this amount were

more or less due to the position or influence of the sun, and probably of the moon, on the terrestrial magnetic sphere; but the particular laws of this influence is a question of great delicacy, and of intricate research, and will be best left to the investigations of those who are theoretically conversant with these subjects.

## TABLES,

Shewing the observed daily variation of the horizontal needle from December 10th to December 31st, 1824, and from January 1st to May 31st, 1825, at Port Bowen. Lat. 73° 14′ N. Long. 88° 54′ W. Mean dip 88° 01′,4. N Mean variation 124° W.

| December. | Mean Time of Observation. | Deflections of Needle No. 1 from the line of Zero. | Temp. |
|---|---|---|---|
| 1824 | | | — |
| 10th | P. M. | | |
| | h. m. | ° ′ | |
| | 8 0 | 0 55 E | |
| | 9 0 | 1 09 | |
| 11th | A. M. | | |
| | 9 0 | 0 26 | 14 |
| | P. M. | | |
| | 2 0 | 0 22 | 15 |
| | 6 0 | 0 30 | 15 |
| | 7 0 | 0 49 | 13½ |
| | 8 0 | 0 59 | 13½ |
| | 10 0 | 1 04 | 12½ |
| | 11 0 | 1 06 | 14 |
| | 12 0 | 1 11 | 13½ |

| December. | Mean Time of Observation. | Deflections of Needle No. 1 from the line of Zero. | Temp. |
|---|---|---|---|
| 1824 | A. M. | | — |
| 12th | h. m. | ° ′ | ° |
| | 1 0 | 1 14 E | 15 |
| | 2 0 | 1 16 | 15 |
| | 3 0 | 1 16 | 16 |
| | 4 0 | 1 16 | 16 |
| | 5 0 | 1 16 | 16 |
| | 6 0 | 1 14 | 15 |
| | 7 0 | 1 07 | 14 |
| | 8 0 | 1 06 | 9 |
| | 12 0 | 0 58 | |
| | P. M. | | |
| | 1 0 | 0 52 | |
| | 3 0 | 0 22 | 4 |
| 13th | A. M. | | |

| December. | Mean Time of Observation. | Deflections of Needle No. 1 from the line of Zero. | Temp. |
|---|---|---|---|
| 1824 | P. M. | | — |
| 13th | h. m. | ° ′ | ° |
| | 4 0 | 0 21 E | 24 |
| | 7 0 | 0 17 | 20 |
| | 10 0 | 0 19 | 19 |
| | 12 0 | 0 19 | 23 |
| 14th | A. M. | | |
| | 12 0 | 0 20 | 24 |
| | P. M. | | |
| | 7 0 | 0 27 | 25 |
| | 9 0 | 0 27 | |
| 15th | A. M. | | |
| | 3 0 | 0 36 | 28 |
| | P. M. | | |
| | 1 0 | 0 09 | 29 |

*Note.* The registered temperatures, throughout these observations, are according to FAHRENHEIT'S scale, and are all *below zero*, in those columns that have the sign minus (—) only, placed at the top, and *above zero* in those that have the sign plus (+) inserted in like manner. Those columns, however, at the top of which, these signs appear thus, (∓) contain observations, both *below*, and *above zero*, which are pointed out, by their respective signs, being prefixed to the several observations of each denomination.

| December. | Mean Time of Observation. | Deflections of Needle No. 1 from the line of Zero. | Temp. |
|---|---|---|---|
| 1824 | P. M. | | — |
| 15th | h. m. | ° ′ | ° |
| | 3 0 | 0 28 E | 32 |
| | 7 0 | 0 28 | 33 |
| | 9 0 | 0 17 | 33 |
| 16th | A. M. | | |
| | 10 0 | 0 10 | 30 |
| | 11 0 | 0 10 | 28½ |
| | 12 0 | 0 10 | 30 |
| | P. M. | | |
| | 3 0 | 0 15 | 34 |
| | 8 0 | 0 19 | 34 |
| | 11 0 | 0 19 | 34 |
| | 12 0 | 0 19 | 32 |
| 17th | A. M. | | |
| | 5 0 | 0 24 | 28 |
| | 10 0 | 0 42 W | 29 |
| | 12 0 | 0 26 | 28 |
| | P. M. | | |
| | 1 0 | 0 41 | 28 |
| | 2 0 | 0 41 | 28 |
| | 3 0 | 0 26 | 28 |
| | 4 0 | 0 19 | 28 |
| | 6 0 | 0 16 E | 28 |
| | 7 0 | 0 36 | 27 |
| | 9 0 | 0 39 | 24 |
| | 10 0 | 0 42 | 24 |
| | 12 0 | 0 47 | 23 |
| 18th | A. M. | | |
| | 0 30 | 0 39 | 24 |
| | 1 20 | 0 59 | |
| | 3 00 | 0 25 | |
| | 12 0 | 0 16 | |
| | P. M. | | |
| | 1 0 | 0 24 | 22 |
| 19th | A. M. | | |
| | 12 0 | 0 06 W | 14 |
| | P. M. | | |
| | 4 0 | 0 19 E | |
| | 7 0 | 0 12 | |
| | 11 0 | 0 21 | |
| 20th | A. M. | | |
| | 11 35 | 1 06 W | 14 |
| | P. M. | | |
| | 6 0 | 0 19 E | 22 |
| | 7 25 | 0 29 | 24 |
| | 9 0 | 0 33 | 35 |
| | 10 0 | 0 42 | |
| | 11 0 | 0 28 | |
| | 12 0 | 0 46 | |
| 21st | A. M. | | |
| | 9 30 | 0 49 W | |
| | 12 00 | 0 29 | 31 |
| | P. M. | | |
| | 1 15 | 0 20 | 32 |

| December. | Mean Time of Observation. | Deflections of Needle No. 1 from the line of Zero. | Temp. |
|---|---|---|---|
| 1824 | P. M. | | — |
| 21st | h. m. | ° ′ | ° |
| | 5 00 | 0 12 W | 26 |
| | 6 00 | 0 21 E | 27 |
| | 8 00 | 0 34 | 27 |
| | 11 05 | 0 27 | 25 |
| | 11 55 | 0 36 | 24 |
| 22d | A. M. | | |
| | 10 0 | 0 51 W | 25 |
| | 12 0 | 0 18 | 24 |
| | P. M. | | |
| | 1 0 | 0 16 | 25 |
| | 5 0 | 0 14 E | 27 |
| | 7 0 | 0 17 | 26 |
| | 9 0 | 0 23 | 25½ |
| | 10 0 | 0 25 | |
| 23d | A. M. | | |
| | 7 30 | 0 23 | 26 |
| | 10 00 | 0 10 W | 25 |
| | 12 00 | 0 04 E | 32 |
| | P. M. | | |
| | 1 20 | 0 09 | |
| | 5 0 | 0 01 | 31 |
| | 6 0 | 0 17 | 32 |
| | 7 0 | 0 43 | |
| | 8 0 | 0 29 | 31 |
| | 9 0 | 0 22 | 31 |
| | 10 0 | 0 59 | 30 |
| | 11 0 | 0 59 | 32 |
| | 12 0 | 0 53 | 31 |
| 24th | A. M. | | |
| | 1 0 | 0 24 | 27 |
| | 2 0 | 0 32 | 30 |
| | 3 0 | 0 21 | 28 |
| | 4 0 | 0 19 | 27 |
| | 5 0 | 0 27 | |
| | 6 0 | 0 01 | 24 |
| | 7 0 | 0 11 | 22 |
| | 8 0 | 0 05 | 20 |
| | 9 0 | 0 05 | 19 |
| | 10 0 | 0 09 | 18 |
| | 10 35 | 0 09 | |
| | 11 00 | 0 17 | 17 |
| | 11 30 | 0 04 | |
| | 12 00 | 0 04 | 17 |
| | P. M. | | |
| | 2 0 | 0 35 W | 15 |
| | 11 0 | 0 08 E | 16 |
| | 12 0 | 0 04 | 15 |
| 25th | A. M. | | |
| | 1 0 | 0 06 | 16 |
| | 2 0 | 0 06 | 18 |
| | 2 30 | 0 07 W | 19 |
| | 11 50 | 0 14 | 19 |

| December. | Mean Time of Observation. | Deflections of Needle No. 1 from the line of Zero. | Temp. |
|---|---|---|---|
| 1824 | P. M. | | — |
| 25th | h. m. | ° ′ | ° |
| | 0 30 | 0 14 W | 19 |
| | 1 00 | 0 04 | 20 |
| | 1 30 | 0 10 | 20 |
| | 7 00 | 0 02 E | 24 |
| | 8 00 | 0 08 | 24 |
| 26th | A. M. | | |
| | 1 0 | 0 01 | 28 |
| | 2 0 | 0 15 | 28 |
| | 3 0 | 0 13 | 28 |
| | 4 0 | 0 18 | 28 |
| | 12 0 | 0 05 W | 28 |
| | P. M. | | |
| | 1 0 | 0 15 E | 27 |
| | 5 0 | 0 21 | 26 |
| | 8 0 | 0 21 | 26 |
| | 9 0 | 0 21 | 26 |
| | 10 50 | 0 12 | 52 |
| 27th | A. M. | | |
| | 3 0 | 0 22 | 19½ |
| | 6 0 | 0 16 | 19 |
| | 7 0 | 0 14 | 18 |
| | 8 0 | 0 14 | 18 |
| | 10 0 | 0 01 | 18 |
| | 12 0 | 0 03 | |
| 28th | A. M. | | |
| | P. M. | | |
| | 2 20 | 0 09 | 9 |
| | 7 0 | 0 25 | 11 |
| | 7 30 | 0 25 | 11 |
| 29th | A. M. | | |
| | 6 30 | 0 35 W | 9 |
| | 10 0 | 1 21 | 11 |
| | 11 0 | 0 55 | 11 |
| | 11 30 | 0 34 | 8 |
| | 12 0 | 0 58 | 6 |
| | P. M. | | |
| | 1 0 | 0 03 E | 11½ |
| | 1 15 | 0 23 W | 10 |
| | 1 30 | 0 16 | 10 |
| | 1 45 | 0 04 E | 9½ |
| | 2 03 | 0 03 W | 10½ |
| | 4 30 | 0 11 E | 13 |
| | 5 00 | 0 11 | 13 |
| | 6 00 | 0 21 | 13 |
| | 7 0 | 0 28 | 13 |
| | 8 0 | 0 31 | 15 |
| | 9 0 | 0 29 | 15 |
| | 10 0 | 0 25 | 15 |
| | 11 0 | 0 27 | 16 |
| | 12 0 | 0 38 | |
| 30th | A. M. | | |
| | 1 0 | 1 01 | 16 |
| | 1 30 | 0 53 | 15½ |

| December. | Mean Time of Observation. | Deflections of Needle No. 1 from the line of Zero. | Temp. |
|---|---|---|---|
| 1824 | A. M. | | — |
| 30th | h. m. | ° ′ | ° |
| | 2 0 | 0 40 E | 15½ |
| | 3 0 | 0 31 | 14 |
| | 4 0 | 0 31 | 13 |
| | 9 20 | 1 46 W | 13 |
| | 9 35 | 1 46 | |
| | 10 0 | 2 03 | 12 |
| | 10 20 | 1 56 | 12 |
| | 10 35 | 1 37 | 12 |
| | 11 00 | 1 34 | 12 |
| | 11 30 | 1 50 | 12 |
| | 12 0 | 1 34 | 12 |
| | P. M. | | |
| | 6 0 | 0 42 E | 11 |
| | 8 0 | 0 29 | 11 |
| | 10 0 | 0 22 | 11½ |
| | 10 30 | 1 01 | 11 |
| | 11 0 | 2 26 | 11 |
| | 11 20 | 2 44 | 11 |
| | 11 40 | 1 18 | 11 |
| | 12 0 | 0 51 | 10½ |
| 31st | A. M. | | |
| | 3 0 | 0 22 | 11 |
| | 4 0 | 0 18 | 11½ |
| | 5 15 | 0 18 | 15 |
| | 6 0 | 0 22 | 16 |
| | 7 0 | 0 19 W | 15 |
| | 7 20 | 0 42 | 10 |
| | 8 0 | 0 22 | 13 |
| | 10 10 | 0 43 | 13½ |
| | 10 40 | 0 57 | 13½ |
| | 11 0 | 2 15 | 12 |
| | 11 20 | 2 04 | 12½ |
| | 11 40 | 1 02 | 12½ |
| | 12 0 | 1 13 | 12 |
| | P. M. | | |
| | 0 20 | 1 22 | 12 |
| | 0 40 | 1 44 | 11½ |
| | 1 0 | 0 16 | 11 |
| | 1 20 | 0 08 E | 10 |
| | 1 40 | 0 18 | 10 |
| | 5 0 | 0 27 | 12 |
| | 6 0 | 0 15 | 12 |
| | 8 0 | 0 40 | 19 |
| | 9 0 | 0 49 | 19 |
| | 10 0 | 0 44 | 22 |
| | 11 0 | 0 51 | 22 |
| | 11 30 | 0 57 | 22½ |
| | 12 0 | 1 25 | 22½ |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 1st | h. m. | ° ′ | ° ′ | ° |
| | 0 40 | 1 18 E | ..... | 26 |
| | 1 20 | 1 09 | ..... | 26½ |
| | 2 00 | 1 3 | ..... | 25 |
| | 3 0 | 0 37 | ..... | 27 |
| | 4 0 | 0 24 | ..... | 26½ |
| | 5 0 | 0 30 | ..... | 26 |
| | 6 0 | 0 15 | ..... | 26 |
| | 7 0 | 0 07 | ..... | 26 |
| | 8 0 | 0 15 | | |
| | 10 0 | 0 06 W | | |
| | 11 30 | 0 06 | | |
| | 12 0 | ..... | 0 43 W | |
| | P. M. | | | |
| | 0 30 | 0 36 | ..... | 25 |
| | 1 0 | 0 03 | 0 50 | 19 |
| | 1 30 | 0 25 E | ..... | 25 |
| | 2 0 | 0 24 | 0 16 | 22 |
| | 3 0 | 0 24 | 0 09 | 22 |
| | 6 0 | 0 17 | ..... | 26 |
| | 8 20 | 0 26 | 0 13 E | 25½ |
| | 9 0 | 1 01 | ..... | 27½ |
| | — | ..... | 0 21 | 25 |
| | 11 0 | 0 38 | 0 16 | 27 |
| | Mid. | 0 58 | 0 30 | 27 |
| 2d | A. M. | | | |
| | 0 30 | 0 49 | ..... | 26 |
| | 1 00 | 0 37 | 0 30 | 26½ |
| | 1 37 | 0 37 | 0 28 | 25½ |
| | 6 0 | 0 08 | 0 02 W | 25 |
| | 8 0 | 0 02 | 0 10 | 24½ |
| | 9 0 | 0 02 | 0 10 | 24½ |
| | 11 55 | 0 11 W | 0 23 | 25 |
| | 0 30 | Zero | 0 13 | 25 |
| | P. M. | | | |
| | 1 0 | ..... | 0 03 | 24 |
| | 1 30 | 0 07 | 0 02 | 25 |
| | 2 0 | 0 23 E | 0 10 E | |
| | 5 0 | 0 37 | 0 10 | 26 |
| | 6 0 | 0 19 | 0 11 W | 26½ |
| | 7 0 | 0 22 | 0 11 | 27 |
| | 8 0 | 0 36 | 0 16 E | 27 |
| | 9 0 | 0 36 | 0 16 | 27½ |
| | 10 0 | 0 19 | 0 08 | 26 |
| | 10 30 | 0 16 | 0 04 | 25½ |
| | 11 00 | 0 13 | 0 03 | 25½ |
| | 12 0 | 0 18 | 0 06 | 26 |
| 3d | A. M. | | | |
| | 0 30 | 0 13 | 0 03 | 25 |
| | 1 0 | 0 16 | 0 09 | 25 |
| | 1 50 | 0 16 | 0 09 | 24½ |
| | 2 30 | 0 16 | 0 09 | 24½ |
| | 6 05 | 0 20 | 0 23 | 26½ |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 3d | h. m. | ° ′ | ° ′ | ° |
| | 6 35 | 0 24 E | 0 23 E | 26½ |
| | 7 05 | 0 07 | 0 29 | 25½ |
| | 7 35 | Zero | 0 29 | 25½ |
| | 8 5 | 0 08 W | 0 26 | 25½ |
| | 9 0 | ..... | 0 16 | 24 |
| | 10 0 | 0 35 | 0 02 W | 26 |
| | 10 30 | 0 35 | 0 01 | 25 |
| | 11 0 | 0 43 | Zero | 25 |
| | 11 30 | 0 35 | Zero | 25½ |
| | 12 00 | 0 21 | 0 19 E | 26 |
| | P. M. | | | |
| | 0 30 | 0 13 | ..... | 27 |
| | 0 57 | 0 22 | 0 08 | 25½ |
| | 1 30 | 0 22 | 0 08 | 26 |
| | 2 5 | 0 10 | 0 28 | 27½ |
| | 4 05 | 0 02 | 0 28 | 27½ |
| | 5 05 | 0 07 E | 0 28 | 29½ |
| | 6 05 | 0 15 | 0 33 | 29½ |
| | 7 05 | 0 20 | 0 33 | 29½ |
| | 8 00 | 0 20 | 0 33 | 29½ |
| | 9 00 | 0 18 | 0 33 | 29½ |
| | 10 00 | 0 17 | 0 36 | 32 |
| | 11 0 | 0 05 | 0 32 | 32½ |
| | 12 0 | 0 12 | 0 47 | 33 |
| 4th | A. M. | | | |
| | 1 0 | 0 12 | 0 39 | 33½ |
| | 2 0 | 0 08 | 0 36 | 34 |
| | 5 0 | 0 04 | 0 29 | 32½ |
| | 6 0 | 0 04 | 0 16 | 32 |
| | 7 0 | 0 04 W | 0 16 | 31½ |
| | 8 0 | 0 15 | 0 13 | 29 |
| | 9 15 | 0 20 | 0 01 | 27 |
| | 10 05 | 0 32 | 0 10 W | 26 |
| | 11 05 | 0 27 | 0 01 | 26½ |
| | 12 05 | 0 18 | 0 18 E | 27 |
| | P. M. | | | |
| | 1 05 | 0 07 | 0 26 | 26 |
| | 2 00 | 0 01 | 0 26 | 26 |
| | 3 00 | 0 06 E | 0 46 | 26 |
| | 4 00 | 0 06 | 0 31 | 25½ |
| | 5 06 | 0 06 | 0 31 | 26 |
| | 6 00 | 0 06 | 0 30 | 25½ |
| | 7 00 | 0 06 | 0 30 | 27 |
| | 8 00 | 0 06 | 0 30 | 26½ |
| | 9 0 | 0 02 W | 0 30 | 27½ |
| | 10 0 | Zero | 0 30 | 28 |
| | 11 0 | Zero | 0 30 | 27½ |
| | 12 0 | 0 01 E | 0 36 | 28½ |
| 5th | A. M. | | | |
| | 1 5 | 0 01 | 0 31 | 30 |
| | 2 02 | 0 06 | 0 40 | 30½ |
| | 3 02 | 0 08 | 0 31 | 30½ |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 5th | h. m. | ° ′ | ° ′ | ° |
| | 4 0 | 0 01 E | 0 28 E | 30 |
| | 5 0 | Zero | 0 21 | 30 |
| | 6 0 | 0 06 W | 0 07 | 29½ |
| | 7 0 | 0 18 | 0 01 W | 30 |
| | 8 0 | 0 22 | 0 01 | 30 |
| | 9 05 | 0 29 | 0 02 E | 30 |
| | 9 35 | 0 33 | Zero | 29 |
| | 1 05 | 0 37 | 0 12 W | 29½ |
| | 10 35 | 0 48 | 0 17 | 29½ |
| | 11 5 | 0 49 | 0 30 | 29½ |
| | 11 35 | 0 49 | 0 22 | 30½ |
| | P. M. | | | |
| | 0 5 | 0 37 | 0 13 | 31 |
| | 0 35 | 0 41 | 0 03 | 30½ |
| | 1 05 | 0 29 | Zero | 31 |
| | 1 35 | 0 35 | 0 11 | 31½ |
| | 2 05 | 0 41 | 0 11 | 31½ |
| | 3 00 | 0 35 | 0 01 | 32 |
| | 4 5 | 0 15 | 0 27 E | 32½ |
| | 5 2 | 0 01 E | 0 39 | 32½ |
| | 6 17 | 0 33 | 0 51 | 32½ |
| | 7 07 | 0 30 | 0 49 | 34 |
| | 8 00 | 0 51 | 1 25 | 32½ |
| | 9 0 | 1 09 | 1 42 | 32½ |
| | 10 0 | 1 22 | 1 49 | 32½ |
| | 11 0 | 1 18 | 1 41 | 32 |
| | 12 0 | 1 47 | 2 03 | 32 |
| 6th | A. M. | | | |
| | 1 05 | 0 28 | 0 42 | 32 |
| | 1 35 | 0 09 | 0 37 | 32 |
| | 2 05 | Zero | 0 37 | 32 |
| | 2 35 | Zero | 0 37 | 32 |
| | 3 05 | Zero | 0 26 | 31½ |
| | 4 05 | 0 09 | 0 37 | 31 |
| | 5 02 | 0 19 W | 0 16 | 32 |
| | 6 05 | 0 34 | 0 08 | 31½ |
| | 7 0 | 1 05 | 0 33 W | 29 |
| | 8 0 | 1 18 | 0 44 | 28 |
| | 9 52 | 1 35 | 1 00 | 27½ |
| | 10 45 | 1 35 | 0 32 | 27½ |
| | 12 00 | 0 06 | 0 11 E | 28 |
| | P. M. | | | |
| | 0 45 | ..... | 0 08 | 27 |
| | 2 00 | 0 37 | 0 16 W | 28 |
| | 2 35 | 0 17 | 0 09 | 28½ |
| | 4 50 | 0 07 | 0 18 E | 29 |
| | 6 05 | 0 13 E | 0 57 | 29½ |
| | 6 57 | 0 21 | 0 59 | 30 |
| | 8 00 | 0 25 | 0 56 | 30 |
| | 9 0 | 0 37 | 1 02 | 30 |
| | 10 0 | 0 37 | 1 02 | 29½ |
| | 11 2 | 0 53 | 1 50 | 31 |
| | 12 1 | 1 23 | 1 50 | 31 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 7th | h. m. | ° ′ | ° ′ | ° |
| | 1 6 | 1 23 E | 1 34 E | 31 |
| | 2 05 | 0 53 | 1 01 | 31 |
| | 3 05 | 0 43 | 1 12 | 31 |
| | 4 05 | 0 17 | 0 47 | 30½ |
| | 5 05 | 0 08 | 0 39 | 31 |
| | 6 05 | 0 04 W | 0 36 | 31 |
| | 7 00 | 0 10 | 0 09 | 31 |
| | 7 57 | 0 17 | 0 02 | 31 |
| | 9 27 | 1 39 | 0 57 W | 32 |
| | 11 56 | 1 26 | 0 53 | 33½ |
| | P. M. | | | |
| | 2 55 | 0 40 | 0 03 | 33 |
| | 3 57 | 0 06 E | 0 27 E | 32½ |
| | 5 07 | 0 22 | 0 46 | 33 |
| | 7 05 | 0 24 | 1 01 | 32½ |
| | 8 02 | 0 26 | 0 50 | 32½ |
| | 9 0 | 0 18 | 0 50 | 31 |
| | 10 2 | 0 18 | 0 53 | 32 |
| | 11 0 | 0 22 | 0 48 | 30 |
| | 12 0 | 0 34 | 1 06 | 30 |
| 8th | A. M. | | | |
| | 1 15 | 0 16 | 0 30 | 29½ |
| | 2 05 | 0 08 | 0 34 | 29 |
| | 3 05 | 0 08 | 0 49 | 29½ |
| | 4 05 | 0 08 | 0 09 | 30 |
| | 5 10 | 0 09 W | 0 09 | 30½ |
| | 6 05 | 0 14 | 0 04 W | 30½ |
| | 7 04 | 0 31 | 0 30 | 29½ |
| | 8 05 | 0 34 | 0 18 | 29½ |
| | 10 02 | 0 19 | 0 01 | 29½ |
| | 11 02 | 0 07 | 0 08 E | 30 |
| | P. M. | | | |
| | 3 52 | 0 02 | 0 19 | 30½ |
| 10th | A. M. | | | |
| | 7 0 | 0 02 | 0 22 | 29½ |
| | 10 0 | 0 21 | 0 09 W | 30 |
| | 11 10 | ..... | 0 03 | 30 |
| | 12 0 | 0 22 | ..... | 31 |
| | P. M. | | | |
| | 1 5 | 0 27 | 0 18 | 32 |
| | 3 22 | 0 01 E | 0 10 E | 32 |
| | 4 0 | 0 04 | 0 19 | 31½ |
| | 5 0 | 0 13 | 0 37 | 31½ |
| | 6 0 | 0 15 | 0 59 | 32 |
| | 7 0 | 0 15 | 0 59 | 31½ |
| | 8 0 | 0 20 | 1 00 | 32½ |
| | 9 01 | 0 25 | 1 05 | 32½ |
| | 10 7 | 0 25 | 1 01 | 33 |
| | 11 2 | 0 27 | 1 05 | 34 |
| | 12 2 | 0 27 | 1 01 | 34 |
| 11th | A. M. | | | |
| | 1 05 | 0 42 | 1 01 | 4½ |
| | 2 5 | 0 48 | 1 02 | 33½ |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 11th | h. m. | ° ′ | ° ′ | ° |
| | 3 5 | 0 34 E | 0 50 E | 33½ |
| | 4 5 | 0 08 W | Zero | 33½ |
| | 5 05 | 0 05 E | 0 18 | 34½ |
| | 6 05 | 0 04 W | 0 01 W | 34 |
| | 7 02 | 0 20 | 0 01 | 34½ |
| | 8 00 | 0 25 | 0 42 | 34 |
| | 9 02 | 0 36 | 0 44 | 32½ |
| | 10 5 | 1 06 | 0 16 | 33½ |
| | 11 0 | 0 49 | 0 10 | 34½ |
| | 12 0 | 0 52 | 0 54 | 34 |
| | P. M. | | | |
| | 1 17 | 0 36 | 0 49 | 34½ |
| | 2 04 | 0 30 | 0 03 | 35 |
| | 4 02 | 0 01 | 0 19 E | 36½ |
| | 5 02 | 0 08 E | 0 18 | 35 |
| | 6 02 | 0 17 | 0 28 | 36 |
| | 7 02 | 0 17 | 0 28 | 36 |
| | 8 12 | 0 17 | 0 58 | 36 |
| | 9 5 | 0 16 | 0 56 | 36 |
| | 10 5 | 0 16 | 0 49 | 34 |
| | 11 5 | 0 09 | 0 46 | 35 |
| | 12 0 | 0 10 | 0 46 | 35 |
| 12th | A. M. | | | |
| | 1 03 | 0 09 | 1 07 | 35 |
| | 2 4 | 0 08 | 0 48 | 35½ |
| | 3 5 | 0 08 | 0 46 | 35½ |
| | 4 0 | 0 08 | 0 45 | 34½ |
| | 5 6 | 0 08 | 0 29 | 30 |
| | 6 5 | 0 01 W | 0 23 | 35½ |
| | 7 2 | 0 01 | 0 23 | 35½ |
| | 8 2 | 0 01 | 0 23 | 35½ |
| | 9 5 | 0 07 | 0 19 | 36½ |
| | 10 5 | 0 05 | 0 04 W | 36 |
| | 11 5 | 0 16 | Zero | 35½ |
| | 12 2 | 0 16 | 0 06 E | 35 |
| | P. M. | | | |
| | 0 55 | 0 15 | 0 06 | 36½ |
| | 2 05 | 0 02 | 0 15 | 37 |
| | 3 05 | 0 04 | 0 13 | 36 |
| | 4 00 | 0 06 | 0 34 | 35½ |
| | 5 5 | Zero. | 0 36 | 35½ |
| | 6 5 | 0 07 E | 0 28 | 36 |
| | 7 5 | 0 07 | 0 28 | 36 |
| | 8 5 | 0 09 | 0 28 | 36 |
| | 9 2 | 0 05 | 0 27 | 35½ |
| | 10 3 | 0 05 | 0 36 | 35½ |
| | 11 8 | 0 14 | 0 36 | 36 |
| | 12 10 | 0 15 | 0 32 | 37 |
| 13th. | A. M. | | | |
| | 1 5 | 0 15 | 0 46 | 35½ |
| | 2 0 | 0 11 | 0 41 | 35 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 13th. | h. m. | ° ′ | ° ′ | ° |
| | 3 5 | 0 6 E | 0 41 E | 33½ |
| | 4 0 | 0 6 | 0 36 | 32½ |
| | 5 5 | 0 6 | 0 26 | 32½ |
| | 6 5 | 0 6 | 0 17 | 32 |
| | 7 5 | Zero. | 0 17 | 29 |
| | 8 2 | Zero. | 0 13 | 28 |
| | 9 10 | 0 5 W | 0 11 | 26½ |
| | 10 4 | 0 07 | 0 11 | 26 |
| | 11 4 | 0 07 | 0 01 | 25½ |
| | 12 2 | 0 09 | 0 20 | 23½ |
| | P. M. | | | |
| | 1 3 | 0 22 | 0 09 | 22½ |
| | 1 40 | ..... | 0 16 | 24 |
| | 1 57 | 0 02 E | 0 16 | 23 |
| | 3 4 | 0 02 | 0 32 | 18½ |
| | 4 10 | 0 02 | 0 32 | 18 |
| | 5 5 | 0 02 | 0 27 | 17½ |
| | 6 5 | 0 02 | 0 23 | 16½ |
| | 7 5 | 0 02 W | 0 22 | 16 |
| | 8 5 | Zero. | 0 20 | 16 |
| | 9 7 | Zero. | 0 20 | 16 |
| | 10 0 | Zero. | 0 26 | 17 |
| | 10 10 | ..... | 0 34 | 16½ |
| | 11 5 | 0 04 | 0 40 | 16½ |
| | 12 5 | 0 17 E | 0 16 | 16½ |
| 14th. | A. M. | | | |
| | 1 05 | 0 18 | 0 20 | 18½ |
| | 2 03 | 0 25 | 0 27 | 18½ |
| | 3 03 | 0 28 | 0 27 | 19 |
| | 4 02 | 0 22 | 0 27 | 19 |
| | 5 5 | 0 06 | 0 33 | 19 |
| | 6 05 | 0 06 W | 0 27 | 19 |
| | 7 7 | 0 06 | 0 27 | 19 |
| | P. M. | | | |
| | 1 25 | 0 21 | 0 13 W | 19 |
| | 2 05 | 0 22 | Zero | 18 |
| | 3 05 | 0 28 | 0 03 | 19 |
| | 4 00 | 0 44 | 0 11 | 19½ |
| | 5 5 | 0 16 | 0 33 E | 19½ |
| | 6 5 | 0 04 E | 0 56 | 19½ |
| | 7 05 | 0 06 | 1 01 | 19½ |
| | 8 05 | 0 44 | 1 07 | 19½ |
| | 10 07 | 1 05 | 1 29 | 18½ |
| | 11 05 | 1 28 | 1 08 | 18½ |
| | 12 7 | 0 13 | 0 31 | 18½ |
| 15th. | A. M. | | | |
| | 1 5 | 0 59 | 1 01 | 22½ |
| | 2 0 | 0 35 | 0 44 | 22½ |
| | 3 5 | 0 28 | 0 50 | 23 |
| | 4 0 | 0 15 | 0 50 | 25 |
| | 5 5 | 0 01 W | 0 37 | 26 |

| January. | Mean Time of Observation. | Deflections from the line of zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 15th | h. m. | ° ′ | ° ′ | | ° |
| | 6 5 | 0 01 W | 0 37 E | ..... | 25½ |
| | 7 5 | 0 01 | 0 27 | ..... | 25½ |
| | 8 5 | 0 02 E | 0 27 | ..... | 25 |
| | 9 9 | 0 11 W | 0 27 | ..... | 25½ |
| | 10 2 | 0 09 | 0 02 | ..... | 26 |
| | 11 7 | 0 51 | 0 55 W | ..... | 26 |
| | 12 7 | 0 24 | 1 33 | ..... | 26 |
| | P. M. | | | | |
| | 0 57 | 1 23 | 1 18 | | |
| | 1 00 | 0 53 | | | |
| | 1 5 | 0 45 | ..... | ..... | 26½ |
| | 1 8 | 0 45 | | | |
| | 1 20 | ..... | 0 12 | ..... | 25 |
| | 1 38 | 0 55 | 0 44 | ..... | 27 |
| | 1 45 | 1 09 | | | |
| | 1 48 | 1 24 | | | |
| | 1 52 | 1 27 | 0 51 | | |
| | 2 0 | ..... | 0 51 | | |
| | 3 8 | 0 29 | 0 21 E | | |
| | 3 37 | ..... | 0 47 | ..... | 25 |
| | 4 3 | 0 12 E | 0 33 | ..... | 25½ |
| | 5 5 | 0 15 | 0 41 | ..... | 25½ |
| | 6 5 | 0 15 | 0 41 | ..... | 25½ |
| | 7 5 | 0 15 | 0 42 | 0 11 E | 26 |
| | 8 5 | 0 15 | 0 49 | 0 05 | 26 |
| | 9 2 | 0 21 | 0 48 | 0 14 | 27 |
| | 10 6 | 0 43 | 1 28 | 0 53 | 27 |
| | 11 5 | 0 37 | 1 23 | 0 53 | 26 |
| | 12 0 | 1 18 | 1 33 | 1 21 | 26 |
| 16th | A. M. | | | | |
| | 1 10 | 1 18 | 1 33 | 0 57 | 25 |
| | 2 8 | 2 04 | 2 39 | 1 42 | 25½ |
| | 2 53 | 1 24 | 1 59 | 1 29 | 26 |
| | 4 06 | 0 48 | 0 54 | 0 39 | 25½ |
| | 5 08 | 0 01 | 0 33 | 0 01 | 26 |
| | 6 05 | 0 03 | 0 33 | 0 08 | 27 |
| | 7 05 | 0 07 W | 0 03 | 0 07 W | 27 |
| | 8 05 | 0 01 E | 0 11 | 0 07 | 27 |
| | 9 06 | 0 14 W | 0 13 W | 0 13 | 27½ |
| | 12 5 | 1 26 | 1 33 | 2 14 | 28 |
| | P. M. | | | | |
| | 1 8 | 1 26 | 1 12 | 1 17 | 29 |
| | | | 0 34 | 0 55 | 29 |
| | | | 0 38 | | |
| | 3 2 | ..... | 0 23 | 0 43 | 29 |
| | 3 40 | ..... | ..... | 0 12 E | |
| | 4 8 | 0 24 E | 0 26 E | ..... | 28½ |
| | 4 15 | ..... | ..... | Zero | |
| | 5 06 | 0 23 | 0 39 | 0 14 | 30 |
| | 6 05 | 0 23 | 0 42 | 0 17 | 30 |
| | 7 7 | 0 24 | 0 42 | 0 17 | 30 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 16th | h. m. | ° ′ | ° ′ | ° ′ | ° |
| | 8 5 | 0 24 E | 0 50 E | 0 35 E | 29½ |
| | 9 2 | 0 30 | 0 48 | 0 35 | 31 |
| | 10 5 | 0 54 | 0 47 | 0 43 | 31½ |
| | 11 5 | 0 56 | 0 53 | 0 43 | 32 |
| | 12 5 | 0 52 | 0 43 | 0 29 | 32 |
| 17th | A. M. | | | | |
| | 1 05 | 0 20 | 0 36 | 0 10 | 31½ |
| | 2 2 | 0 24 | 0 33 | 0 10 | 31½ |
| | 3 2 | 0 28 | 0 41 | 0 17 | 31½ |
| | 4 1 | 0 17 | 0 27 | 0 14 | 31½ |
| | 5 0 | 0 26 | ..... | 0 10 | 30½ |
| | 5 32 | ..... | 0 14 | ..... | 30 |
| | 6 7 | 0 26 | 0 14 | 0 10 | 30 |
| | 7 6 | 0 25 W | 1 04 W | 1 10 W | 30 |
| | 8 5 | 1 20 | 1 12 | 1 28 | 30 |
| | 8 25 | ..... | 0 39 | 0 26 | 29 |
| | 9 9 | 0 03 | Zero | 0 24 | 28 |
| | 10 5 | 0 16 | 0 20 | 0 36 | 28 |
| | 11 5 | 0 23 | 0 10 | 0 26 | 28 |
| | 12 5 | 0 47 | 0 06 | 0 18 | 27 |
| | P. M. | | | | |
| | 1 02 | 0 02 | 0 04 | 0 45 | 27½ |
| | 2 02 | 0 37 | 0 37 | 0 40 | 27 |
| | 3 02 | 0 35 | 0 40 | 0 28 | 27 |
| | 4 00 | 0 20 E | 0 10 E | 0 12 E | 26 |
| | 5 6 | 0 04 | 0 27 | 0 33 | 25½ |
| | 6 7 | 0 39 | 0 27 | 0 40 | 25½ |
| | 7 6 | 0 39 | 0 27 | 0 40 | 25½ |
| | 8 7 | 0 45 | 0 46 | 0 41 | 25½ |
| | 9 10 | 0 28 | 0 33 | 0 12 | 26 |
| | 10 7 | 0 39 | 1 17 | 0 48 | 26½ |
| | 11 02 | 0 22 | 0 20 | 0 27 | 26 |
| | 12 07 | 0 22 | 0 20 | 0 25 | 25 |
| 18th | A. M. | | | | |
| | 1 5 | 0 22 | 0 44 | 0 26 | 25½ |
| | 2 05 | 0 31 | 0 50 | 0 32 | 25½ |
| | 3 05 | 0 23 | 1 04 | 0 50 | 26 |
| | 4 4 | 0 25 | 0 35 | 0 25 | 25 |
| | 5 7 | 0 25 | 0 35 | 0 25 | 20 |
| | 6 6 | 0 45 W | 0 08 W | 0 05 W | 21½ |
| | 7 6 | 0 08 | 0 08 | 0 05 | 20½ |
| | 8 6 | Zero | 0 10 E | Zero | 20½ |
| | 10 5 | 1 03 | 0 48 W | 0 53 | 19 |
| | 11 4 | 1 23 | 0 56 | 1 13 | 20½ |
| | 12 5 | 1 33 | 1 27 | 1 42 | 22 |
| | P. M. | | | | |
| | 1 19 | 0 38 | 0 31 | 0 24 | 23 |
| | 2 15 | 1 03 | 0 52 | 0 53 | 23 |
| | 3 13 | 0 06 | Zero | 0 06 | 23 |
| | 4 03 | Zero | 0 09 E | 0 11 E | 23 |
| | 4 56 | 0 10 E | 0 20 | 0 26 | 22 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 18th | h. m. | ° ′ | ° ′ | ° ′ | ° |
| | 6 10 | 0 53 E | 1 28 E | 0 26 E | 23 |
| | 7 0 | 0 19 | 1 05 | 0 26 | 23 |
| | 8 0 | 0 19 | 1 05 | 0 30 | 21 |
| | 9 10 | 0 10 | 0 16 | 0 10 | 21½ |
| 19th | A. M. | | | | |
| | 8 0 | ..... | 0 22 W | 0 24 W | 21 |
| | P. M. | | | | |
| | 1 30 | 0 15 W | 0 12 | 0 07 | 20 |
| | 2 2 | ..... | 0 26 | 0 27 | 19 |
| | 2 10 | ..... | 0 42 | 0 49 | 19 |
| | 2 15 | ..... | ..... | 0 31 | 17 |
| | 2 28 | 0 05 | 0 41 | 0 31 | 17½ |
| | 3 0 | ..... | 0 10 | 0 18 E | 18 |
| | 4 5 | ..... | 0 32 E | 0 03 | 18 |
| | 5 7 | ..... | 0 03 W | 0 13 | 18 |
| | 6 7 | ... . | 0 03 | 0 11 | 18 |
| | 7 7 | ..... | 0 03 | 0 11 | 18 |
| | 8 7 | ..... | 0 57 E | 0 31 | 16½ |
| | 9 7 | ..... | 0 39 | 0 36 | 19 |
| | 9 56 | 0 19 E | 0 32 | 0 23 | 18½ |
| | 11 3 | 0 19 | 0 26 | 0 09 | 19 |
| | 12 4 | 0 23 | 0 31 | 0 18 | 19 |
| 20th | A. M. | | | | |
| | 1 11 | 0 28 | 0 34 | 0 28 | 22 |
| | 2 5 | 0 51 | 1 14 | 0 35 | 23 |
| | 3 5 | 0 52 | 1 13 | 0 34 | 24 |
| | 4 0 | 0 35 | 0 04 | 0 29 | 24 |
| | 5 6 | 0 07 W | 0 01 W | 0 04 W | 24 |
| | 6 5 | 0 07 | 0 32 | 0 21 | 24½ |
| | 7 5 | 0 07 | 0 19 | 0 04 | 24½ |
| | 8 5 | 0 04 E | 0 11 | Zero | 26 |
| | 9 10 | 0 04 W | 0 14 | 0 01 E | 25½ |
| | 10 04 | 0 12 | 0 28 | 0 13 W | 23½ |
| | 11 04 | 0 21 | 0 21 | 0 13 | 23½ |
| | 11 59 | 0 31 | 0 24 | 0 13 | 23 |
| | P. M. | | | | |
| | 1 2 | 0 13 | 0 37 | 0 37 | 24 |
| | 1 57 | 0 02 E | 0 53 | 0 35 | 24 |
| | 3 01 | 0 05 W | 0 51 | 0 11 E | 25 |
| | 4 0 | 0 02 | 0 34 | 0 05 W | 25½ |
| | 5 5 | 0 06 E | 0 15 E | 0 03 E | 26½ |
| | 6 0 | 0 05 W | 0 01 | 0 08 | 27 |
| | 6 55 | 0 04 E | 0 01 | 0 08 | 28 |
| | 8 05 | 0 04 | 0 01 | 0 10 | 28½ |
| | 9 08 | 0 13 | 0 06 | 0 10 | 29 |
| | 10 0 | 0 13 | 0 06 | 0 10 | 29 |
| | 11 7 | 0 13 | 0 06 | 0 10 | 28½ |
| | 12 9 | 0 11 | 0 04 | 0 09 | 28½ |
| 21st | A. M. | | | | |
| | 1 02 | 0 01 W | 0 03 | 0 08 | 28 |
| | 2 0 | 0 07 | 0 05 | 0 13 | 28 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 21st | h. m. | ° ′ | ° ′ | ° ′ | ° |
| | 3 0 | 0 05 W | 0 04 E | 0 13 E | 28 |
| | 4 6 | 0 01 | Zero | 0 07 | 26½ |
| | 6 2 | 0 01 | Zero | 0 07 | 27½ |
| | 7 2 | 0 01 | 0 07 W | 0 07 | 28 |
| | 8 2 | 0 11 | 0 07 | 0 07 | 28 |
| | 9 37 | 0 22 | 0 13 | 0 08 W | 28½ |
| | 11 5 | 0 12 | 0 20 | 0 16 | 30 |
| | 12 2 | 0 02 | 0 14 | 0 17 E | 30 |
| | P. M. | | | | |
| | 1 40 | ..... | 0 26 | 0 12 W | 30 |
| | 1 58 | 0 17 | 0 06 E | 0 05 | 30 |
| | 2 10 | ..... | 0 02 | 0 05 | 30 |
| | 3 7 | 0 01 | 0 46 | 0 07 E | 30 |
| | 4 0 | 0 01 | 0 46 | 0 07 | 30 |
| | 5 5 | 0 14 E | 0 46 | 0 14 | 30½ |
| | 6 0 | 0 13 | 0 51 | 0 14 | 30½ |
| | 7 2 | 0 14 | 0 47 | 0 14 | 30½ |
| | 8 2 | 0 14 | 0 47 | 0 14 | 30½ |
| | 9 10 | 0 14 | 0 28 | 0 15 | 31 |
| | 10 0 | 0 14 | 0 28 | 0 15 | 31½ |
| | 11 0 | 0 14 | 0 28 | 0 15 | 28½ |
| | 12 0 | 0 10 | 0 28 | 0 15 | 29 |
| 22d | A. M. | | | | |
| | 1 10 | 0 08 | 0 20 | 0 13 | 28½ |
| | 2 5 | 0 01 | 0 10 | 0 10 | 28½ |
| | 3 4 | 0 01 | 0 10 | 0 10 | 29 |
| | 4 0 | 0 07 | 0 10 | 0 10 | 29 |
| | 5 10 | 0 07 | 0 10 | 0 10 | 30½ |
| | 6 2 | 0 03 | 0 04 | 0 01 | 30 |
| | 7 00 | 0 15 W | 0 11 W | 0 11 W | 31 |
| | 8 00 | 0 26 | 0 22 | 0 17 | 30 |
| | 10 2 | 0 33 | 0 03 | 0 36 | 27½ |
| | 11 2 | 0 22 | 0 05 E | 0 23 | 27 |
| | 12 2 | 0 18 | 0 17 | 0 19 | 27½ |
| | P. M. | | | | |
| | 1 01 | 0 31 | 0 27 W | 0 04 E | 29 |
| | 1 57 | 0 25 | 0 24 | 0 22 W | 29 |
| | 3 02 | 0 19 | 0 06 | 0 08 | 27½ |
| | 3 59 | 0 10 | 0 01 E | 0 02 | 26½ |
| | 5 00 | 0 10 | 0 16 W | 0 06 E | 26 |
| | 6 0 | 0 08 | 0 16 | 0 06 | 25½ |
| | 7 0 | 0 08 | 0 16 | 0 06 | 24½ |
| | 8 0 | 0 02 E | 0 01 E | 0 06 | 24½ |
| | 9 10 | 0 03 | 0 02 | 0 06 | 24½ |
| | 10 0 | 0 03 | 0 02 | 0 06 | 25 |
| | 11 0 | 0 42 | 0 09 | 0 36 | 27 |
| | 12 0 | 0 42 | 0 48 | 0 36 | 27½ |
| 23d | A. M. | | | | |
| | 1 5 | 0 48 | 0 18 | 0 45 | 29 |
| | 2 0 | 0 13 | 0 01 W | 0 13 | 29 |
| | 3 0 | 0 13 | 0 01 | 0 10 | 27 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 23d | h. m. | ° ′ | ° ′ | ° ′ | ° |
| | 4 0 | 0 04 E | 0 07 W | 0 08 E | 25½ |
| | 5 0 | 0 08 W | 0 15 | 0 05 W | 25½ |
| | 6 0 | 0 08 | 0 15 | 0 05 | 25½ |
| | 7 0 | 0 08 | 0 15 | 0 05 | 25½ |
| | 8 0 | 0 02 | 0 11 | 0 01 | 25 |
| | 9 10 | 0 16 | 0 23 | 0 14 | 25 |
| | 12 15 | 1 17 | 1 00 | 1 09 | 25 |
| | P. M. | | | | |
| | 1 10 | 1 26 | 0 51 | 1 05 | 25½ |
| | 2 5 | 0 03 | 0 27 | 0 18 | 26 |
| | 3 2 | 0 11 | 0 08 | 0 08 E | 26 |
| | 4 10 | 0 14 E | 0 07 | 0 15 | 29 |
| | 5 5 | 0 18 | 0 02 | 0 17 | 29½ |
| | 6 0 | 0 18 | 0 02 | 0 17 | 30 |
| | 7 0 | Zero | 0 03 | 0 09 | 30½ |
| | 8 2 | 0 07 | 0 16 E | 0 12 | 32 |
| | 9 0 | ..... | 0 09 | ..... | 32 |
| | 9 52 | 0 10 | 0 09 | 0 12 | 32 |
| | 11 5 | Zero | 0 09 | 0 12 | 32½ |
| | 12 0 | 0 04 | Zero | 0 12 | 32½ |
| 24th | A. M. | | | | |
| | 1 10 | 0 05 | 0 06 | 0 20 | 33½ |
| | 2 00 | 0 09 | 0 06 | 0 21 | 33½ |
| | 3 00 | 0 09 | 0 06 | 0 21 | 33½ |
| | 4 00 | 0 09 | 0 06 | 0 08 | 34 |
| | 5 0 | 0 09 | 0 06 | 0 08 | 36½ |
| | 6 0 | 0 09 | 0 06 | 0 08 | 37 |
| | 7 0 | 0 09 W | 0 15 W | 0 08 W | 37 |
| | 8 0 | 0 09 | 0 15 | 0 03 E | 37 |
| | 9 5 | 0 02 E | 0 12 | 0 03 | 36 |
| | 10 5 | 0 10 W | 0 17 | 0 14 W | 35 |
| | 11 5 | 0 20 | 0 25 | 0 14 | 34 |
| | 12 1 | 0 03 | 0 13 | Zero | 34½ |
| | P. M. | | | | |
| | 1 8 | 0 10 | 0 13 | Zero | 35 |
| | 2 8 | 0 16 | 0 17 | 0 02 | 35½ |
| | 3 5 | 0 26 | 0 20 | 0 13 | 35½ |
| | 3 59 | 0 12 | 0 14 | 0 09 | 35½ |
| | 5 00 | 0 02 E | 0 03 | 0 09 E | 35 |
| | 6 0 | 0 14 | 0 18 E | 0 09 | 34½ |
| | 7 0 | 0 02 | 0 18 | 0 01 | 34 |
| | 8 0 | 0 02 | 0 23 | 0 17 | 35 |
| | 9 3 | 0 12 | 0 18 | 0 15 | 34 |
| | 10 2 | 0 12 | 0 18 | 0 17 | 34½ |
| | 11 2 | 0 12 | 0 18 | 0 14 | 35 |
| | 12 2 | 0 12 | 0 28 | 0 14 | 35½ |
| 25th | A. M. | | | | |
| | 1 05 | 0 03 | 0 38 | 0 17 | 35 |
| | 1 57 | 0 03 | 0 36 | 0 09 | 35 |
| | 3 05 | 0 10 | 0 31 | 0 09 | 36 |
| | 4 05 | 0 14 | 0 38 | 0 09 | 36 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 25th | h. m. | ° ′ | ° ′ | ° ′ | ° |
| | 5 00 | 0 03 E | 0 38 E | 0 09 E | 37 |
| | 6 0 | 0 03 | 0 38 | 0 09 | 37 |
| | 7 0 | Zero | 0 28 | 0 02 | 37 |
| | 8 0 | 0 06 W | 0 10 W | 0 17 W | 37 |
| | 9 7 | 0 09 | 0 18 | 0 08 | 38 |
| | 10 5 | 0 17 | 0 18 | 0 11 | 38 |
| | 11 1 | 0 33 | 0 27 | 0 26 | 38 |
| | 12 0 | 0 20 | 0 20 | 0 08 | 38½ |
| | P. M. | | | | |
| | 1 3 | 0 40 | 0 31 | 0 08 | 39½ |
| | 2 5 | 0 40 | 0 29 | 0 15 | 39 |
| | 3 5 | 0 06 | 1 04 | Zero | 40 |
| | 4 2 | 0 02 E | 0 19 | 0 04 E | 40 |
| | 5 0 | 0 02 | 0 19 | 0 01 W | 40½ |
| | 6 1 | 0 02 | 0 19 | 0 09 E | 40½ |
| | 7 0 | 0 23 | 0 05 | 0 15 | 40½ |
| | 7 58 | 0 14 | 0 18 | 0 11 | 40½ |
| | 9 10 | 0 14 | 0 06 | 0 12 | 40½ |
| | 10 0 | 0 14 | 0 08 E | 0 12 | 40½ |
| | 11 0 | 0 14 | 0 51 W | 0 12 | 40½ |
| | 12 0 | 0 14 | 0 30 | 0 12 | 40½ |
| 26th | A. M. | | | | |
| | 1 09 | 0 08 | 0 14 | 0 12 | 40 |
| | 2 4 | 0 11 | 0 11 | 0 20 | 40 |
| | 3 4 | 0 13 | 0 11 | 0 16 | 39 |
| | 3 59 | 0 17 | 0 09 | 0 13 | 39 |
| | 5 0 | 0 01 | 0 01 | 0 14 | 39 |
| | 6 02 | Zero | 0 06 E | 0 09 | 39 |
| | 7 0 | Zero | 0 02 W | 0 03 | 39½ |
| | 8 0 | 0 16 W | 0 02 | 0 09 W | 40 |
| | 10 3 | 1 55 | 1 18 | 2 22 | 40 |
| | 11 3 | 1 37 | 1 03 | 1 20 | 39½ |
| | 12 3 | 1 22 | 0 50 | 1 11 | 38 |
| | P. M. | | | | |
| | 1 9 | 1 06 | 0 38 | 1 10 | 38 |
| | 2 15 | 1 06 | 0 42 | ..... | 38 |
| | 3 0 | 0 48 | 0 21 | ..... | 37 |
| | 4 0 | 0 15 | 0 08 | 0 06 | 36½ |
| | 5 5 | 0 17 E | 0 08 E | 0 20 E | 36½ |
| | 6 5 | 0 17 | 0 26 | 0 17 | 36½ |
| | 7 0 | 0 09 | 0 10 | 0 17 | 34½ |
| | 8 5 | 0 09 | 0 11 W | 0 17 | 34 |
| | 9 10 | 0 09 | 0 30 | 0 13 | 34 |
| | 10 5 | 0 09 | 0 30 | 0 19 | 34 |
| | 11 0 | 0 09 | 0 16 E | ..... | 31½ |
| | 11 57 | 0 09 | 0 16 | ..... | 28½ |
| 27th | A. M. | | | | |
| | 1 0 | 0 48 | 0 38 | 0 52 | 27½ |
| | 2 0 | 0 54 | 0 41 | 0 58 | 27½ |
| | 3 0 | 0 15 | 0 09 | 0 19 | 27 |
| | 4 0 | 0 05 | 0 27 W | 0 0 | 27 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 27th | h. m. | ° ′ | ° ′ | ° ′ | ° |
| | 5 5 | 0 02 E | 0 26 W | 0 10 E | 26½ |
| | 6 0 | 0 13 W | 0 29 | 0 15 W | 27 |
| | 7 0 | 0 42 | 0 30 | 0 15 | 27 |
| | 8 0 | 0 37 | 0 18 | 0 11 | 27 |
| | 9 22 | 1 36 | 0 43 | 1 19 | 25½ |
| | 10 8 | 0 27 | 0 18 | ..... | 25½ |
| | 11 7 | 0 48 | 0 39 | ..... | 26 |
| | 11 57 | 0 19 | 0 08 | .... | 27 |
| | P. M. | | | | |
| | 1 02 | 0 52 | 0 54 | 0 46 | 28 |
| | 2 00 | 0 26 | 0 30 | ..... | 28 |
| | 3 0 | 0 06 | 0 30 E | 0 08 E | 28 |
| | 4 5 | 0 08 E | 0 17 | 0 13 | 27½ |
| | 5 5 | 0 08 | 0 17 | 0 13 | 26½ |
| | 6 27 | 0 08 | 0 17 | 0 13 | 27 |
| | 7 5 | 0 08 | 0 17 | 0 13 | 27 |
| | 8 2 | 0 23 | 0 18 | 0 17 | 27½ |
| | 9 11 | 0 40 | 0 27 | 0 20 | 28½ |
| | 9 57 | 0 56 | 0 32 | 0 56 | 29 |
| | 11 2 | 1 04 | 0 32 | ..... | 30 |
| | 11 59 | 0 56 | 0 31 | 0 45 | 30½ |
| 28th | A. M. | | | | |
| | 1 0 | 0 39 | 0 06 | 0 34 | 31½ |
| | 2 0 | 0 45 | 0 27 | 0 18 W | 31½ |
| | 3 0 | 0 03 W | 0 01 | 0 27 | 32 |
| | 4 0 | 0 03 | 0 39 | Zero | 33½ |
| | 5 5 | 0 01 | 0 39 | Zero | 32 |
| | 6 0 | 0 03 | 0 35 | 0 01 | 33 |
| | 7 0 | Zero | 0 42 | 0 02 E | 33 |
| | 8 0 | 0 11 | 0 04 | 0 16 W | 32½ |
| | 9 5 | 0 25 | 0 14 W | 0 09 | 32 |
| | 9 57 | 0 15 | 0 17 | ..... | 30 |
| | 11 2 | 0 32 | 0 22 | ..... | 30 |
| | 12 1 | 0 22 | 0 23 | 0 19 | 29½ |
| | P. M. | | | | |
| | 1 7 | 0 19 | 0 14 | 0 17 | 28 |
| | 2 59 | 0 19 | 0 14 | 0 06 | 26 |
| | 4 2 | 0 08 | 0 03 E | ..... | 25 |
| | 5 1 | 0 09 E | 0 17 | ..... | 26 |
| | 6 5 | 0 10 | 0 21 | 0 05 E | 26 |
| | 7 5 | 0 13 | 0 21 | 0 05 | 26 |
| | 8 6 | 0 04 | 0 17 | 0 08 | 26½ |
| | 9 4 | 0 26 | 0 14 | 0 32 | 28 |
| | 9 55 | 0 38 | 0 19 | 0 38 | 28 |
| | 11 10 | 0 42 | 0 19 | ..... | 29½ |
| | 12 3 | 0 19 | 0 16 | 0 27 | 29 |
| 29th | A. M. | | | | |
| | 1 0 | 0 11 | 0 02 | 0 17 | 30 |
| | 2 0 | 0 11 | 0 07 | 0 16 | 30 |
| | 3 0 | 0 05 | 0 06 | 0 13 | 30 |
| | 4 4 | 0 01 W | 0 06 | 0 01 | 30 |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 29th | h. m. | ° ′ | ° ′ | ° ′ | ° |
| | 5 05 | 0 04 W | 0 03 E | 0 04 W | 30½ |
| | 6 0 | 0 04 | 0 05 | 0 02 | 30½ |
| | 7 0 | Zero | 0 07 | 0 01 | 29½ |
| | 8 15 | 0 01 | 0 07 | 0 01 | 29 |
| | 9 7 | 0 49 | 0 20 W | 0 35 | 28 |
| | 10 0 | 0 28 | 0 18 | 0 23 | 28 |
| | 11 0 | 0 28 | 0 26 | 0 17 | 27½ |
| | 11 59 | 0 36 | 0 22 | 0 24 | 27½ |
| | P. M. | | | | |
| | 1 4 | 0 20 E | 0 06 E | 0 15 | 28 |
| | 2 6 | 0 16 W | 0 39 | 0 07 | 28½ |
| | 3 2 | 0 03 E | 0 02 | 0 11 E | 29 |
| | 4 0 | 0 03 | 0 02 | 0 11 | 28½ |
| | 5 2 | 0 03 | 0 02 | 0 04 | 28½ |
| | 6 2 | 0 03 | 0 05 | 0 04 | 29 |
| | 7 0 | 0 08 | 0 05 | 0 04 | 29 |
| | 8 5 | 0 09 | 0 05 | 0 04 | 28½ |
| | 9 5 | 0 01 | 0 05 | 0 08 | 27½ |
| | 10 7 | 0 01 | 0 05 | 0 15 | 27½ |
| | 10 57 | 0 05 | 0 06 | ..... | 27½ |
| | 12 0 | 0 05 | 0 04 | ..... | 27 |
| 30th | A. M. | | | | |
| | 1 7 | 0 55 | 0 30 | 0 53 | 25½ |
| | 2 0 | 0 29 | 0 08 | 0 25 | 26½ |
| | 3 5 | 0 04 | 0 01 W | 0 10 | 25½ |
| | 3 55 | 0 13 | 0 08 | 0 10 | 25½ |
| | 5 0 | 0 13 | 0 01 | 0 10 | 26 |
| | 6 0 | 0 07 | 0 01 | 0 02 | 27 |
| | 7 0 | 0 01 | 0 07 | 0 04 | 25½ |
| | 8 0 | 0 01 | 0 07 | 0 04 | 25 |
| | 11 55 | 0 24 | 0 28 | 0 10 W | 25½ |
| | P. M. | | | | |
| | 1 21 | 0 02 W | 0 11 | ..... | 26 |
| | 2 03 | 0 02 | 0 04 | ..... | 26 |
| | 3 0 | Zero | 0 03 | Zero | 25½ |
| | 3 57 | 0 06 E | 0 07 E | 0 07 E | 25½ |
| | 5 0 | 0 06 | 0 06 | 0 07 | 25½ |
| | 6 0 | 0 15 | 0 12 | 0 12 | 27 |
| | 7 0 | 0 13 | 0 21 | 0 07 | 28 |
| | 8 0 | 0 11 | 0 33 | 0 07 | 28 |
| | 9 5 | 0 11 | 1 02 | 0 09 | 29 |
| | 10 0 | 0 11 | 1 03 | 0 16 | 29½ |
| | 11 0 | 0 11 | 1 03 | 0 16 | 30½ |
| | 12 0 | 0 11 | 0 46 | 0 16 | 31 |
| 31st | A. M. | | | | |
| | 1 15 | Zero | 0 47 | ..... | 30 |
| | 2 02 | 0 07 | 0 40 | | |
| | 3 04 | 0 02 | 0 36 | | |
| | 3 59 | 0 09 | 0 27 | 0 10 | 30 |
| | 5 0 | 0 05 | 0 24 | 0 05 | 30½ |
| | 6 0 | 0 05 | 0 23 | 0 04 | 30½ |

| January. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Needle No. 3. | Temp. |
|---|---|---|---|---|---|
| 1825. | A. M. | | | | — |
| 31st | h. m. | ° ′ | ° ′ | ° ′ | ° |
| | 7 0 | 0 04 W | 0 07 E | 0 04 W | 30½ |
| | 8 0 | 0 14 | 0 03 W | 0 10 | 30½ |
| | P. M. | | | | |
| | 1 1 | ..... | 0 03 | 0 10 | 31 |
| | 3 10 | ..... | 0 02 E | 0 05 E | 33 |
| | 3 30 | 0 13 E | ..... | ..... | 34½ |
| | 4 02 | 0 26 | 0 20 | 0 12 | 34 |
| | 5 7 | 0 27 | 0 17 | 0 04 | 35 |
| | 6 5 | 0 27 | 0 22 | 0 04 | 35 |
| | 7 5 | 0 27 | 0 06 | 0 04 | 35 |
| | 8 5 | 0 27 | 0 17 | 0 04 | 35½ |
| | 9 15 | 0 20 | 0 10 | 0 04 | 35 |
| | 10 6 | 0 18 | 0 10 | 0 04 | 34 |
| | 11 2 | 0 17 | 0 05 | 0 08 | 34 |
| Feb. | 12 1 | 0 22 | 0 05 | 0 11 | 34 |
| 1st | A. M. | | | | |
| | 1 11 | 0 20 | 0 10 | 0 08 | 33½ |
| | 1 57 | 0 20 | 0 10 | 0 08 | 34 |
| | 2 58 | 0 20 | 0 19 | 0 09 | 33½ |
| | 3 58 | 0 24 | Zero | Zero | 33 |
| | 5 7 | 0 26 | 0 02 | Zero | 33 |
| | 6 9 | 0 26 | 0 02 W | Zero | 33 |
| | 7 5 | 0 08 | 0 02 | 0 05 W | 33 |
| | 8 5 | 0 08 W | 0 01 | 0 08 | 33½ |
| | 9 7 | 0 07 E | 0 04 | 0 10 | 31½ |
| | 10 0 | 0 03 W | 0 04 | 0 10 | 31½ |
| | 10 57 | 0 04 | 0 08 | ..... | 31½ |
| | 11 57 | 0 15 | 0 13 | ..... | 31½ |
| | P. M. | | | | |
| | 1 2 | 0 06 | 0 08 | ..... | 32½ |
| | 2 0 | 0 01 E | 0 04 | ..... | 33½ |
| | 3 1 | 0 02 | 0 10 E | ..... | 32 |
| | 4 1 | 0 19 | 0 18 | ..... | 32½ |
| | 5 1 | 0 19 | 0 22 | ..... | 32½ |
| | 6 1 | 0 19 | 0 19 | ..... | 35 |
| | 7 1 | 0 19 | 0 19 | ..... | 35 |
| | 8 1 | 0 19 | 0 19 | ..... | 35 |
| | 8 57 | 0 01 W | 0 09 | ..... | 34½ |
| | 9 52 | 0 01 | 0 11 | ..... | 34½ |
| | 10 59 | 0 01 | 0 17 | ..... | 34½ |
| | 11 56 | 0 09 E | 0 26 | ..... | 34½ |
| 2d | A. M. | | | | |
| | 1 9 | 0 15 | 0 18 | ..... | 36 |
| | 2 2 | 0 09 | 0 17 | ..... | 36 |
| | 3 1 | 0 09 | 0 22 | ..... | 36 |
| | 3 58 | 0 07 | 0 22 | ..... | 36 |
| | 5 01 | 0 07 | 0 22 | ..... | 36 |
| | 6 01 | 0 07 | 0 22 | ..... | 36½ |
| | 7 2 | 0 09 W | 0 06 | ..... | 37 |
| | 8 1 | 0 09 | Zero | ..... | 38 |
| | 9 12 | 0 11 E | Zero | ..... | 37 |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 2d | h. m. | ° ′ | ° ′ | ° |
| | 10 4 | 0 06 E | 0 09 W | 37 |
| | 10 58 | 0 12 W | 0 11 | 37½ |
| | 12 1 | 0 18 | 0 20 | 35½ |
| | P. M. | | | |
| | 1 06 | 0 04 | 0 14 E | 38 |
| | 1 56 | 0 04 | 0 14 | 38½ |
| | 3 02 | 0 04 | 0 09 | 40 |
| | 4 02 | 0 04 E | 0 32 | 40½ |
| | 5 06 | 0 04 | 0 06 | 39 |
| | 6 1 | 0 04 | 0 05 W | 39 |
| | 7 1 | 0 04 | 0 12 E | 39 |
| | 8 3 | 0 04 | 0 12 | 39 |
| | 9 6 | 0 05 | 0 30 | 39 |
| | 10 1 | 0 11 | 0 30 | 38 |
| | 11 1 | Zero | 0 18 | 38 |
| | 12 2 | Zero | 0 18 | 38 |
| 3d | A. M. | | | |
| | 1 14 | 0 13 | 0 19 | 35 |
| | 2 2 | 0 13 | 0 16 | 37½ |
| | 3 2 | 0 11 | 0 06 | 37½ |
| | 3 57 | 0 03 | 0 03 | 39 |
| | 5 6 | 0 03 | 0 03 | 39 |
| | 6 1 | 0 03 | Zero | 38 |
| | 7 1 | 0 06 W | 0 03 W | 37½ |
| | 8 1 | 0 32 | 0 13 | 37 |
| | 10 5 | 0 18 | 0 08 | 36½ |
| | 11 2 | 0 29 | 0 13 | 36 |
| | 11 58 | 0 25 | 0 10 | 34½ |
| | P. M. | | | |
| | 1 0 | 0 18 | 0 10 | 25 |
| | 2 3 | 0 05 E | 0 06 | 25½ |
| | 3 2 | 0 03 | 0 04 E | 26 |
| | 4 0 | 0 07 | Zero | 26½ |
| | 9 3 | 0 05 | Zero | 26½ |
| | 10 1 | 0 05 | Zero | 25½ |
| | 11 1 | 0 05 | Zero | 25½ |
| | 12 1 | 0 05 | Zero | 26½ |
| 4th | A. M. | | | |
| | 1 07 | 0 04 | 0 04 W | |
| | 2 2 | 0 06 | 0 07 | 27 |
| | 3 2 | 0 06 | 0 19 | 27 |
| | 4 7 | 0 06 | 0 23 | 26½ |
| | 5 6 | 0 06 | 0 24 | 26 |
| | 6 2 | 0 06 | 0 24 | 25½ |
| | 7 5 | 0 06 W | 0 33 | 26 |
| | 8 2 | 0 32 | 0 42 | 26 |
| | 9 17 | 0 29 | 0 42 | 25½ |
| | 9 57 | 0 18 | 0 38 | 25½ |
| | 11 2 | 0 10 | 0 31 | 26 |
| | 12 2 | 0 35 | 0 42 | 26½ |

| February. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No. 1. | Needle No. 2. | |
| 1825 | P. M. | | | — |
| 4th | h. m. | ° ′ | ° ′ | ° |
| | 1 0 | 0 09 W | 0 24 W | 27 |
| | 1 58 | 0 06 E | 0 31 | 27 |
| | 3 02 | 0 13 | 0 07 | 26 |
| | 4 02 | 0 17 | 0 02 | 23½ |
| | 5 7 | 0 17 | 0 04 E | 20 |
| | 6 4 | 0 17 | 0 04 | 18 |
| | 7 1 | 0 18 | 0 05 | 20 |
| | 8 0 | 0 18 | 0 05 | 20 |
| | 9 15 | 0 11 | 0 04 W | 20½ |
| | 10 3 | 0 04 | 0 12 | 20½ |
| | 11 2 | 0 15 | 0 03 E | 22 |
| | 12 1 | 0 32 | 0 12 | 22½ |
| 5th | A. M. | | | |
| | 1 2 | 0 37 | 0 07 | 36 |
| | 1 57 | 0 29 | 0 07 | 26½ |
| | 3 0 | 0 29 | Zero | 27 |
| | 3 58 | 0 05 W | 0 10 W | 26 |
| | 5 6 | 0 03 E | 0 10 | 25 |
| | 6 3 | 0 03 | 0 10 | 26 |
| | 7 3 | 0 03 | 0 10 | 26 |
| | 8 3 | 0 03 | 0 10 | 26 |
| | 9 12 | 0 08 W | 0 13 | 25 |
| | 9 57 | 0 19 | 0 27 | 24 |
| | 11 6 | 0 26 | 0 36 | 24 |
| | 12 0 | 0 05 | 0 36 | 23 |
| | P. M. | | | |
| | 1 6 | 0 10 E | 0 26 E | 24 |
| | 2 0 | 0 10 | 0 38 | 25 |
| | 3 2 | 0 13 W | 0 02 | 24½ |
| | 3 58 | 0 15 E | 0 05 W | 24 |
| | 5 4 | 0 15 | 0 14 | 24½ |
| | 5 57 | 0 15 | 0 14 | 24½ |
| | 7 0 | 0 15 | 0 08 | 24½ |
| | 8 0 | 0 15 | 0 08 | 24½ |
| | 9 4 | 0 20 | 0 12 | 22½ |
| | 9 59 | 0 30 | Zero | |
| | 11 6 | 0 15 | 0 11 | |
| | 12 4 | 0 30 | 0 03 | 22 |
| 6th | A. M. | | | |
| | 1 02 | 0 19 | 0 14 | 20½ |
| | 2 0 | 0 11 | 0 13 | 20½ |
| | 3 1 | 0 06 | 0 13 | 21½ |
| | 3 57 | 0 06 | 0 19 | 21½ |
| | 5 06 | 0 06 | 0 19 | 21½ |
| | 6 1 | 0 06 | 0 19 | 21½ |
| | 7 1 | 0 06 | 0 19 | 20½ |
| | 8 1 | 0 06 | Zero. | 21 |
| | 9 2 | 0 04 | 0 26 | 17½ |
| | 12 2 | 0 12 W | 1 21 | 15 |
| | P. M. | | | |
| | 1 08 | 0 39 | 1 21 | 17 |

| February. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No. 1. | Needle No. 2. | |
| 1825. | P. M. | | | — |
| 6th | h. m. | ° ′ | ° ′ | ° |
| | 1 56 | 0 01 W | 0 51 W | 17 |
| | 3 9 | 0 19 E | 0 22 | 16½ |
| | 4 1 | 0 12 | 0 03 E | 16 |
| | 5 2 | 0 12 | 0 01 | 16 |
| | 6 1 | 0 09 | 0 06 | 16 |
| | 7 1 | 0 01 | 0 06 | 16 |
| | 8 1 | 0 01 | 0 11 W | 16½ |
| | 9 9 | 0 11 | 0 11 | 16½ |
| | 10 1 | 0 11 | 0 04 | 16½ |
| | 11 1 | 0 11 | 0 03 | 16½ |
| | 12 1 | 0 11 | 0 03 | 16½ |
| 7th | A. M. | | | |
| | 1 3 | 0 09 | 0 05 | 18 |
| | 1 57 | 0 06 | Zero | 19 |
| | 3 01 | 0 06 | 0 07 | 18½ |
| | 4 2 | 0 06 | 0 08 | 17½ |
| | 5 6 | 0 06 | 0 08 | 17½ |
| | 6 1 | 0 06 | 0 08 | 18½ |
| | 7 1 | 0 06 | 0 32 | 18½ |
| | 8 1 | 0 01 W | 0 11 | 18½ |
| | 9 57 | 0 07 | 0 32 | 20 |
| | 11 10 | 0 07 | 0 41 | 21 |
| | 11 58 | 0 03 | 0 38 | 21 |
| | P. M. | | | |
| | 1 6 | 0 05 E | 0 39 | 21 |
| | 2 0 | 0 05 | 0 43 | 22 |
| | 3 0 | 0 05 W | 0 43 | 24 |
| | 4 0 | 0 08 E | 0 36 | 24 |
| | 5 10 | 0 06 | 0 41 | 25 |
| | 5 56 | 0 06 | 0 41 | 25½ |
| | 7 2 | 0 08 | 0 01 E | 26½ |
| | 8 2 | 0 04 | 0 01 | 27 |
| | 9 1 | 0 13 | 0 01 | 28 |
| | 10 1 | 0 13 | 0 03 | 28½ |
| | 11 1 | 0 13 | 0 03 | 28½ |
| | 12 1 | 0 19 | 0 03 | 28½ |
| 8th | A. M. | | | |
| | 1 08 | 0 12 | 0 01 | 28 |
| | 2 0 | 0 12 | 0 07 W | 28 |
| | 3 2 | 0 14 | 0 07 | 28 |
| | 3 58 | 0 07 | 0 07 | 28 |
| | 5 2 | 0 14 | 0 07 | 29 |
| | 6 2 | 0 02 | 0 29 | 30 |
| | 7 02 | 0 02 | 0 29 | 30 |
| | 7 56 | 0 02 | 0 39 | 30 |
| | 9 2 | 0 12 W | 0 19 | 31 |
| | 10 2 | 0 19 | 0 21 | 31 |
| | 11 2 | 0 30 | 0 36 | 31 |
| | 11 58 | 0 14 | 0 25 | 31 |
| | P. M. | | | |
| | 1 16 | 0 07 E | 0 20 | 33½ |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 8th | h. m. | ° ′ | ° ′ | ° |
| | 2 9 | 0 17 E | 0 20 W | 33½ |
| | 3 1 | 0 14 | 0 15 | 33½ |
| | 4 1 | 0 14 | 0 20 | 34 |
| | 5 1 | 0 11 | 0 13 | 34 |
| | 6 1 | 0 21 | 0 04 | 35 |
| | 7 2 | 0 18 | 0 06 | 35½ |
| | 8 2 | 0 26 | 0 06 E | 35½ |
| | 9 2 | 0 25 | Zero | 35 |
| | 9 58 | 0 33 | Zero | 36 |
| | 11 1 | 0 39 | 0 21 W | 36 |
| | 11 56 | 0 46 | 0 19 | 36 |
| 9th | A. M. | | | |
| | 1 1 | 0 22 | 0 24 E | 36½ |
| | 1 58 | 0 26 | 0 31 | 36½ |
| | 2 58 | 0 17 | 0 31 | 36 |
| | 3 56 | 0 17 | 0 28 | 36½ |
| | 5 2 | 0 11 | 0 26 | 36½ |
| | 6 2 | 0 04 W | Zero | 36½ |
| | 7 2 | 0 07 | Zero | 36½ |
| | 8 2 | 0 11 | 0 03 W | 36 |
| | 9 6 | 0 03 | 0 03 | 36 |
| | 9 56 | 0 08 | 0 39 | 36 |
| | 11 0 | 0 15 | 0 50 | 36 |
| | 11 58 | 0 14 | 0 49 | 36 |
| | P. M. | | | |
| | 1 6 | 0 03 | 0 40 | 36 |
| | 2 9 | 0 10 E | 0 20 | 36½ |
| | 3 7 | 0 03 W | 0 25 | 36 |
| | 4 2 | 0 05 E | 0 14 | 36½ |
| | 5 2 | 0 12 | 0 11 | 36 |
| | 6 | 0 10 | 0 08 | 36½ |
| | 7 2 | 0 14 | 0 16 | 36 |
| | 7 58 | 0 18 | 0 11 | 36 |
| | 9 7 | 0 19 | 0 08 | 36½ |
| | 9 56 | 0 18 | 0 14 | 36½ |
| | 11 8 | 0 21 | 0 11 | 36½ |
| | 12 4 | 0 28 | 0 01 E | 36½ |
| 10th | A. M. | | | |
| | 1 5 | 0 40 | 0 07 W | 36 |
| | 2 2 | 0 20 | 0 07 | 36 |
| | 3 2 | 0 10 | 0 07 | 36 |
| | 4 2 | 0 10 | 0 11 | 36½ |
| | 5 11 | 0 11 | 0 33 | 37 |
| | 6 1 | 0 11 | 0 20 | 36½ |
| | 6 58 | 0 06 | 0 53 | 36½ |
| | 7 56 | 0 09 W | 0 42 | 36 |
| | 9 54 | 0 21 | 0 43 | 35½ |
| | 11 | 0 21 | 0 43 | 35½ |
| | 11 37 | 0 27 | ..... | 35½ |
| | 11 58 | 0 18 | 0 43 | 35½ |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 10th | h. m. | ° ′ | ° ′ | ° |
| | 1 1 | Zero | 0 38 W | 35½ |
| | 2 6 | 0 09 E | 0 33 | 35½ |
| | 5 9 | 0 10 | 0 33 | 34½ |
| | 5 58 | 0 10 | 0 17 | 34½ |
| | 6 58 | 0 10 | 0 11 | 34 |
| | 9 59 | 0 30 | 0 11 | 32½ |
| | 10 59 | 0 43 | 0 06 | 32 |
| | 11 59 | 0 17 | 0 06 | 31½ |
| 11th | A. M. | | | |
| | 1 7 | 0 17 | 0 28 | 31½ |
| | 2 4 | 0 10 | 0 43 | 30½ |
| | 5 2 | 0 16 | 0 32 | 30 |
| | 5 59 | 0 01 W | 0 44 | 28 |
| | 7 03 | 0 03 | 0 49 | 27½ |
| | 9 49 | 1 05 | 1 17 | 29 |
| | 10 20 | ..... | 1 54 | 28½ |
| | 10 24 | 1 59 | 2 49 | 29 |
| | 10 43 | 1 17 | 2 10 | 28½ |
| | 10 59 | 0 59 | 1 57 | 29 |
| | 11 59 | 1 32 | 2 09 | 30½ |
| | P. M. | | | |
| | 1 1 | 3 34 | 2 29 | 30½ |
| | 1 29 | 3 39 | 2 43 | 31 |
| | 1 59 | 4 26 | 2 59 | 31 |
| | 2 12 | 3 40 | 3 33 | 31 |
| | 2 42 | 2 49 | 2 53 | 32 |
| | 5 16 | 0 29 E | 0 29 | 33 |
| | 5 57 | 0 03 W | 0 58 | 33 |
| | 7 02 | 0 03 | 0 43 | 33 |
| | 9 53 | 0 15 E | 0 23 | 30 |
| | 10 58 | 0 19 | 0 09 | 29 |
| | 11 58 | 0 26 | 0 07 | 26½ |
| 12th | A. M. | | | |
| | 0 58 | 1 27 | 0 02 | 24 |
| | 1 28 | 1 33 | 0 19 E | 22½ |
| | 2 2 | 0 58 | 0 19 | 20 |
| | 3 2 | 0 41 | 0 16 | 21 |
| | 5 12 | 0 26 W | 0 41 W | 20 |
| | 6 | 0 39 E | 0 16 E | 19 |
| | 6 3 | 0 24 W | 0 34 W | |
| | 6 10 | ..... | 0 04 | 20 |
| | 7 11 | 0 11 E | 0 24 | 18 |
| | 9 53 | 0 57 W | 0 59 | 15 |
| | 10 52 | 0 27 | 0 59 | 14 |
| | 11 15 | 0 59 | 1 17 | 14 |
| | 12 2 | 0 30 | 1 29 | 13 |
| | P. M. | | | |
| | 1 2 | 1 28 | 2 05 | 13 |
| | 1 22 | 2 46 | 2 14 | 13 |
| | 1 46 | 1 14 | 1 36 | 13 |
| | 2 8 | 3 14 | 1 37 | 12 |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 12th | h. m. | ° ′ | ° ′ | ° |
| | 2 28 | 1 31 W | 1 37 W | 11½ |
| | 5 01 | 0 44 | 1 22 | 10 |
| | 6 01 | 0 31 | 1 22 | 11 |
| | 7 1 | 0 31 | 1 22 | 10½ |
| | 9 58 | 0 39 E | 0 49 | 10 |
| | 11 02 | 0 19 | 0 01 | 10 |
| | 11 58 | 1 47 | 0 32 E | 10 |
| 13th | A. M. | | | |
| | 1 11 | 1 13 | 0 32 | 11 |
| | 2 7 | 1 06 | 0 09 | 11 |
| | 5 01 | 0 40 | 0 18 W | 12½ |
| | 6 01 | 0 12 | 0 11 | 13 |
| | 7 7 | 0 39 W | 0 52 | 12 |
| | 12 2 | 0 45 | 1 13 | 14½ |
| | P. M. | | | |
| | 1 2 | 1 43 E | 1 36 | 13½ |
| | 1 42 | 0 48 | 1 03 | 13 |
| | 2 12 | 2 42 W | 1 51 | 14 |
| | 2 42 | 0 06 | 0 56 | 14 |
| | 5 3 | 0 17 | 0 53 | 17½ |
| | 5 59 | 0 06 | 0 39 | 18 |
| | 6 59 | 0 36 | 0 39 | 20 |
| | 10 6 | 0 09 E | 0 03 | 24 |
| | 10 53 | 0 15 | 0 05 | 24 |
| | 12 4 | 0 44 | 0 19 E | 24 |
| 14th | A. M. | | | |
| | 1 1 | 1 43 | 0 34 | 24 |
| | 1 53 | 1 25 | 0 31 | 24 |
| | 2 40 | 0 43 | 0 08 | 24 |
| | 5 3 | 0 36 | 0 06 W | 25 |
| | 5 59 | 0 30 | 0 22 | 24½ |
| | 6 59 | 0 04 W | 0 26 | 23½ |
| | 10 1 | 1 55 | 1 28 | 25 |
| | 10 31 | 2 20 | 1 45 | 25 |
| | 11 1 | 2 20 | 1 45 | 24½ |
| | 11 31 | 2 36 | 2 37 | 24½ |
| | 12 1 | 1 53 | 2 51 | 24½ |
| | P. M. | | | |
| | 0 31 | 2 35 | 3 08 | 24½ |
| | 1 7 | 2 39 | ..... | 25 |
| | 1 31 | 2 36 | 2 48 | 27 |
| | 2 1 | 2 36 | 2 58 | 25 |
| | 2 31 | 2 00 | 2 19 | 24½ |
| | 5 2 | 0 19 E | 0 52 | 26½ |
| | 5 58 | 0 54 | 0 23 | 27 |
| | 7 6 | 0 03 W | 0 24 | 28 |
| | 10 14 | 1 50 E | 0 22 E | 31 |
| | 10 44 | 2 51 | 1 51 | 31 |
| | 10 58 | 2 31 | 1 40 | 31 |
| | 11 9 | 2 21 | 1 40 | 31 |
| | 11 59 | 2 31 | 1 39 | 30½ |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 15th | h. m. | ° ′ | ° ′ | ° |
| | 1 6 | 2 31 E | 3 34 E | 32 |
| | 2 1 | 2 48 | 3 34 | 32 |
| | 3 1 | 2 28 | 3 34 | 32 |
| | 3 31 | 1 28 | 2 58 | 32 |
| | 5 6 | 0 05 | 1 42 | 28½ |
| | 5 57 | 0 03 | 1 32 | 28½ |
| | 6 57 | 1 25 W | Zero. | 29 |
| | 9 51 | 1 56 | 0 38 W | 30½ |
| | 10 16 | 1 56 | 0 42 | 30 |
| | 11 1 | 1 28 | 1 04 | 29½ |
| | 11 10 | 1 48 | ..... | .. |
| | 11 46 | 2 08 | 1 20 | 29 |
| | 11 56 | 2 08 | 2 36 | 29 |
| | 12 11 | 2 08 | 2 16 | 29 |
| | P. M. | | | |
| | 0 28 | ..... | 3 03 | 27½ |
| | 1 0 | 2 24 | ..... | .. |
| | 1 26 | 2 14 | 2 52 | 27½ |
| | 2 4 | 1 33 | 2 03 | 28 |
| | 5 2 | 0 22 | 1 02 | 31 |
| | 6 1 | 0 01 | 0 27 | 30 |
| | 7 1 | 0 01 | 0 27 | 31 |
| | 10 17 | 1 18 E | 0 02 E | 31 |
| | 10 58 | 1 48 | 0 39 | 31 |
| | 11 59 | 2·04 | 0 39 | 31 |
| 16th | A. M. | | | |
| | 1 5 | 3 04 | 1 21 | 31 |
| | 1 16 | 2 19 | 1 17 | 31 |
| | 1 42 | 1 50 | 1 06 | 31½ |
| | 2 17 | 1 46 | 1 14 | 32 |
| | 2 55 | 1 02 | 1 02 | 32 |
| | 5 1 | 0 15 | 0 22 | 34 |
| | 6 4 | 0 22 W | 0 18 W | 34 |
| | 7 01 | 0 12 | 0 17 | 34 |
| | 9 52 | 0 22 | 0 33 | 34 |
| | 10 22 | 0 21 | 0 40 | 33½ |
| | 11 7 | 0 24 | 0 31 | 33 |
| | 12 1 | 0 41 | 0 46 | 33 |
| | P. M. | | | |
| | 1 2 | 0 22 | 0 41 | 33 |
| | 2 0 | 0 43 | 1 11 | 33 |
| | 2 42 | 0 34 | 0 45 | 30½ |
| | 5 4 | Zero. | 0 24 | 29½ |
| | 6 1 | Zero. | 0 24 | 29 |
| | 7 01 | 0 06 E | 0 28 | 29 |
| | 9 58 | 0 36 | 0 19 | 24½ |
| | 10 42 | 0 20 | 0 20 | 23½ |
| | 11 7 | 0 22 | 0 34 | 23½ |
| | 12 8 | 0 46 | 0 18 | 23 |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 17th | h. m. | ° ′ | ° ′ | ° |
| | 1 1 | 0 19 E | 0 29 E | 22 |
| | 2 0 | 0 43 | 0 08 | 21 |
| | 5 1 | 0 08 | 0 01 W | 22 |
| | 5 58 | 0 08 | 0 04 | 22½ |
| | 7 0 | 0 01 W | 0 04 | 22 |
| | 9 59 | 0 11 | 0 23 | 20½ |
| | 10 30 | ..... | 0 37 | 19 |
| | 11 3 | 0 18 | | |
| | 11 20 | 0 18 | 0 19 E | 19 |
| | 11 30 | ..... | 0 12 | 19 |
| | 11 57 | 0 36 | 0 12 | 19 |
| | P. M. | | | |
| | 0 30 | 1 03 | 1 01 W | 16 |
| | 1 5 | 1 12 | 1 03 | 17 |
| | 1 28 | 1 13 | 1 03 | 18 |
| | 1 42 | 0 59 | 1 02 | 18 |
| | 2 11 | 1 14 | 1 06 | 17 |
| | 2 42 | 1 05 | 1 05 | 17½ |
| | 3 15 | 0 28 | 0 52 | 18½ |
| | 5 1 | 0 20 | 0 32 | 19 |
| | 6 0 | 0 05 E | 0 43 | 29 |
| | 6 59 | 0 19 | 0 43 | 22½ |
| | 10 2 | 0 49 | 0 22 | 24½ |
| | 10 59 | 0 41 | 0 42 | |
| | 11 25 | 0 43 | 1 05 | |
| | 11 52 | 0 59 | 1 25 | |
| | 12 2 | 1 06 | 1 26 | |
| 18th | A. M. | | | |
| | 0 19 | 1 15 | 1 33 E | 25 |
| | 1 1 | 1 40 | 1 39 | 25 |
| | 1 29 | 1 40 | 1 39 | 25½ |
| | 2 01 | 0 43 | 1 34 | 25 |
| | 2 42 | 0 14 | 1 11 | 27 |
| | 4 59 | 0 24 | 1 23 | 28 |
| | 5 59 | 0 33 W | 0 22 | 28½ |
| | 6 59 | 0 02 E | 0 13 | 28½ |
| | 10 1 | 0 41 W | 0 11 | 26½ |
| | 11 1 | 0 22 | 0 11 | 26 |
| | 12 1 | 0 11 | 0 32 | 26 |
| | P. M. | | | |
| | 1 1 | 0 23 E | 0 01 | 25 |
| | 2 01 | 0 38 | 0 11 | 27 |
| | 5 53 | 0 10 | 0 12 W | 28½ |
| | 6 7 | 0 05 | 0 12 | 28 |
| | 7 02 | 0 07 | 0 12 | 29 |
| | 9 59 | 0 21 | 0 12 | 30 |
| | 10 59 | 0 08 | 0 22 | 30½ |
| | 11 59 | 0 20 | 0 22 | 31 |
| 19th | A. M. | | | |
| | 1 8 | 0 17 | 0 11 | 32½ |
| | 1 49 | 0 24 | 0 11 | 32½ |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 19th | h. m. | ° ′ | ° ′ | ° |
| | 2 7 | 0 44 E | 0 11 W | 32½ |
| | 2 30 | 0 24 | 0 11 | 32½ |
| | 3 01 | 0 24 | 0 11 | 31 |
| | 3 48 | 0 24 | 0 23 | 31 |
| | 5 1 | 0 06 W | 0 16 E | 30 |
| | 6 1 | 0 03 E | 0 16 | 30 |
| | 7 1 | 0 01 W | 0 11 | 30 |
| | 9 30 | ..... | 0 24 W | 30 |
| | 9 52 | 0 28 | ..... | 31 |
| | 10 42 | 0 39 | 1 06 | 28 |
| | 10 59 | 0 16 | 0 31 | 26½ |
| | 11 29 | 0 59 | 1 12 | 26½ |
| | 11 59 | 0 45 | 1 21 | 26½ |
| | P. M. | | | |
| | 0 58 | 0 50 | 1 13 | 26½ |
| | 1 31 | 0 58 | 0 52 | 27½ |
| | 2 2 | 1 04 | 1 07 | 28½ |
| | 2 32 | 1 14 | 1 17 | 29½ |
| | 3 1 | 0 55 | 1 01 | 31 |
| | 5 1 | 0 11 | 0 28 | 33 |
| | 6 01 | 0 03 E | 0 28 | 35½ |
| | 7 01 | 0 03 | 0 28 | 33½ |
| | 7 41 | 0 36 | 0 08 | 35½ |
| | 9 56 | 0 10 | 0 02 E | 34½ |
| | 10 59 | 0 26 | 0 03 | 35 |
| | 11 59 | 0 31 | 0 21 | 35½ |
| 20th | A. M. | | | |
| | 1 1 | 0 28 | 0 03 W | 35½ |
| | 1 31 | 0 24 | 0 11 E | 35½ |
| | 2 2 | 0 54 | 0 24 | 36½ |
| | 2 32 | 0 21 | 0 11 | 34½ |
| | 3 | 0 25 | 0 11 | 34 |
| | 5 02 | 0 01 | 0 03 W | 36 |
| | 6 01 | 0 04 | 0 22 | 36½ |
| | 7 01 | 0 04 | 0 22 | 36 |
| | 9 47 | 0 04 W | 0 29 | 35 |
| | 10 2 | 0 09 | 0 28 | 35 |
| | 10 27 | 0 10 | 0 12 | 33 |
| | 11 4 | 1 05 | 0 42 | 31½ |
| | 11 32 | 1 09 | 1 14 | 32 |
| | 12 6 | 1 13 | 1 21 | 31½ |
| | P. M. | | | |
| | 0 18 | 1 30 | 1 24 | 30½ |
| | 0 59 | 0 59 | 1 16 | 29½ |
| | 1 31 | 1 06 | 1 22 | 31½ |
| | 1 41 | 0 25 | 1 20 | 32 |
| | 1 55 | 0 35 | 0 59 | 32½ |
| | 2 8 | 0 33 | 0 41 | 33 |
| | 2 31 | 1 07 | 1 24 | 33 |
| | 2 54 | 0 49 | 1 13 | 33 |
| | 3 08 | 0 46 | 0 59 | 33 |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 20th | h. m. | ° ′ | ° ′ | ° |
| | 5 4 | 0 01 W | 0 14 W | 37½ |
| | 5 58 | 0 14 E | 0 14 | 36 |
| | 7 3 | 0 14 | 0 03 | 38½ |
| | 9 7 | 0 21 | 0 05 E | 37½ |
| | 10 2 | 0 28 | 0 17 | 37½ |
| | 11 5 | 0 15 | 0 12 W | 37½ |
| | 11 58 | 0 15 | 0 12 | 37½ |
| 21st | A. M. | | | |
| | 0 59 | 0 15 | 0 20 | 38 |
| | 2 6 | 0 09 | 0 20 | 37½ |
| | 5 4 | 0 31 W | 0 32 | 39 |
| | 6 1 | 0 31 | 0 32 | 39 |
| | 7 02 | 0 12 | 0 01 | 39 |
| | 9 01 | 0 22 | 0 34 | 39 |
| | 9 32 | 0 15 | 0 34 | 39 |
| | 10 3 | 0 43 | 0 49 | 38½ |
| | 10 41 | 0 49 | 0 51 | 34 |
| | 10 59 | 0 24 | 0 42 | 32½ |
| | 11 28 | 0 20 | 0 24 | 25 |
| | 11 59 | 0 08 | 0 22 | 25 |
| | P. M. | | | |
| | 0 17 | 0 02 | 0 17 | 31 |
| | 0 58 | 0 10 E | 0 07 E | 31½ |
| | 1 26 | 0 21 | 0 06 | 30½ |
| | 1 52 | 0 27 | 0 01 | 31½ |
| | 2 22 | 0 24 | 0 27 | |
| | 2 38 | 0 19 | 0 02 W | 32 |
| | 3 13 | 0 09 | 0 12 | |
| | 3 54 | Zero | 0 07 | |
| | 4 59 | 0 16 | 0 50 | 35 |
| | 5 59 | 0 29 | 0 02 | 36 |
| | 6 59 | 0 48 | 0 08 E | 35½ |
| | 7 57 | 0 36 | 0 17 | 34 |
| | 8 58 | 0 46 | 0 22 | 33 |
| | 9 26 | 0 48 | 0 26 | 31 |
| | 10 1 | 0 35 | 0 16 | 32 |
| | 10 31 | 0 31 | 0 02 W | 31½ |
| | 11 1 | 0 20 | 0 09 | 32 |
| | 12 5 | 0 49 | 0 14 | 31 |
| 22d | A. M. | | | |
| | 1 1 | 0 51 | 0 37 E | 28½ |
| | 2 0 | 0 48 | 0 37 | 28½ |
| | 5 9 | 0 05 | 0 02 W | 28½ |
| | 6 4 | 0 30 W | 0 42 | 28½ |
| | 7 9 | 0 55 | 0 58 | 28½ |
| | 7 52 | 0 49 | 1 00 | 28½ |
| | 9 31 | 0 17 | 0 23 | 25 |
| | 9 51 | 0 26 | 0 44 | 25 |
| | 10 49 | 0 14 | 1 04 | 24 |
| | 11 1 | 0 19 | 1 04 | 24 |
| | 11 14 | 0 30 | 0 47 | 23 |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 22d | h. m. | ° ′ | ° ′ | ° |
| | 11 31 | 0 31 W | 0 52 W | 23 |
| | 11 44 | 0 23 | 0 41 | 23 |
| | 11 59 | 0 20 | 0 31 | 23 |
| | P. M. | | | |
| | 0 58 | 0 10 E | 0 34 | 20½ |
| | 1 17 | 0 11 | 0 14 | 22 |
| | 1 58 | 0 40 | 0 29 E | 23½ |
| | 2 13 | 0 35 | 0 31 | 24 |
| | 3 05 | 0 27 | 0 28 | 24½ |
| | 5 5 | 0 07 W | 0 08 | 25½ |
| | 6 3 | 0 09 E | 0 11 | 26½ |
| | 6 58 | 0 24 | 0 19 | 26½ |
| | 7 56 | 0 35 | 0 24 | 27 |
| | 9 51 | 0 38 | 0 06 | 27 |
| | 10 59 | 0 33 | Zero | 26½ |
| | 11 59 | 0 26 | 0 38 | 27 |
| 23d | A. M. | | | |
| | 0 26 | ..... | 0 17 | 31½ |
| | 1 06 | 0 28 | 0 08 | 31½ |
| | 1 29 | 0 01 | 0 11 W | 32 |
| | 2 09 | 0 53 | 0 52 E | 31½ |
| | 2 41 | 0 34 | 0 48 | 31½ |
| | 3 01 | 0 04 W | 0 41 | 31½ |
| | 3 33 | 0 04 | 0 30 | 31½ |
| | 5 6 | 0 06 E | 0 39 | 32 |
| | 6 1 | 0 06 | 0 10 | 31½ |
| | 6 59 | 0 58 W | 0 54 W | 30½ |
| | 9 57 | 0 57 | 1 09 | 29½ |
| | 10 26 | 0 31 | 1 00 | 29 |
| | 10 58 | 1 29 | 1 31 | 28½ |
| | 11 27 | 1 20 | 1 11 | 27½ |
| | 11 58 | 0 49 | 1 20 | 25 |
| | P. M. | | | |
| | 0 27 | 0 50 | 0 41 | 24½ |
| | 1 00 | 0 03 | 0 50 | 25 |
| | 1 27 | 0 25 | 0 20 | 25½ |
| | 2 01 | 0 17 E | 0 03 | 22½ |
| | 5 08 | 0 02 | 0 06 | 28½ |
| | 6 01 | 0 12 | 0 16 E | 28½ |
| | 7 04 | 0 19 | 0 06 | 28½ |
| | 9 59 | 0 27 | 0 37 | 30 |
| | 10 59 | 0 56 | 0 37 | 30½ |
| | 11 59 | 0 56 | 0 37 | 30½ |
| 24th | A. M. | | | |
| | 1 06 | 0 27 | 0 42 | 26½ |
| | 1 25 | 0 11 | 0 16 | 26½ |
| | 2 7 | 0 11 | 0 14 | 26½ |
| | 3 2 | 0 05 W | 0 07 | 26½ |
| | 5 6 | 0 01 | 0 06 | 27½ |
| | 6 1 | 0 17 E | 0 09 | 28 |
| | 6 18 | 0 11 W | 0 13 W | 28 |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 24th | h. m. | ° ′ | ° ′ | ° |
| | 9 32 | 0 18 W | 0 17 W | 26½ |
| | 10 2 | 0 22 | 0 21 | 26 |
| | 10 22 | 0 15 | 0 20 | 26½ |
| | 10 52 | 0 14 | 0 20 | 26½ |
| | 11 19 | 0 10 | 0 14 | 27 |
| | 12 7 | 0 02 | 0 17 | 27 |
| | P. M. | | | |
| | 1 0 | 0 06 E | 0 16 | 26½ |
| | 1 29 | 0 17 | 0 07 | 26½ |
| | 2 2 | 0 30 | 0 02 E | 26 |
| | 5 7 | 0 05 | 0 15 W | 26½ |
| | 5 58 | 0 05 | 0 15 | 26½ |
| | 6 59 | 0 06 | 0 21 | 27 |
| | 9 47 | 0 11 | 0 09 | 27½ |
| | 10 17 | 0 07 | 0 18 | 27½ |
| | 11 2 | 0 09 | 0 09 | 27 |
| | 12 1 | 0 09 | 0 02 | 27½ |
| 25th | A. M. | | | |
| | 0 59 | 0 13 | 0 01 | 29 |
| | 2 4 | Zero | 0 23 | 30 |
| | 5 11 | 0 09 | 0 18 | 30½ |
| | 6 01 | 0 08 W | 0 24 | 30½ |
| | 6 56 | 0 06 E | 0 21 | 30½ |
| | 9 5 | 0 08 W | 0 29 | 29 |
| | 9 32 | 0 01 | 0 31 | 29 |
| | 10 2 | 0 21 | 0 43 | 25 |
| | 10 32 | 0 10 | 0 39 | 24 |
| | 10 57 | 0 10 | 0 36 | 23 |
| | 11 32 | 0 05 E | 0 22 | 23 |
| | 12 6 | 0 04 W | 0 29 | 22 |
| | P. M. | | | |
| | 0 48 | 0 01 | 0 17 | 22 |
| | 1 18 | 0 16 E | 0 39 | 22 |
| | 1 27 | 0 02 W | 0 23 | 26 |
| | 1 34 | 0 31 | | |
| | 1 52 | 0 03 | 0 31 | 23 |
| | 2 13 | 0 20 | 0 18 | 23½ |
| | 2 50 | 0 04 E | 0 08 | 24 |
| | 5 2 | 0 01 | 0 34 | 31 |
| | 5 59 | 0 01 | 0 26 | 30 |
| | 6 59 | 0 08 | 0 26 | 30½ |
| | 9 6 | 0 11 | 0 13 | 29 |
| | 10 6 | 0 17 | 0 13 | 28 |
| | 11 5 | 0 13 | 0 14 | 28½ |
| | 12 3 | 0 05 | 0 15 | 28½ |
| 26th | A. M. | | | |
| | 1 4 | 0 02 | 0 01 E | 27 |
| | 1 32 | 0 01 | 0 03 W | 26½ |
| | 2 12 | 0 03 | 0 11 | 26½ |
| | 2 55 | 0 09 | 0 01 E | 26 |
| | 3 33 | 0 06 | 0 07 W | 23½ |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 26th | h. m. | ° ′ | ° ′ | ° |
| | 5 11 | 0 02 E | 0 19 W | 23½ |
| | 6 01 | 0 04 W | 0 49 | 22½ |
| | 6 59 | 0 10 | 0 49 | 21½ |
| | 10 2 | 0 25 | 0 43 | 18 |
| | 11 5 | 0 35 | 0 58 | 18 |
| | 12 3 | 0 17 | 0 51 | 17 |
| | P. M. | | | |
| | 1 02 | 0 38 | 1 00 | 16½ |
| | 2 01 | 0 34 | 0 51 | 16 |
| | 2 17 | 0 29 | 0 48 | 16 |
| | 5 06 | 0 09 E | 0 44 | 13½ |
| | 6 02 | 0 04 | 0 16 | 12½ |
| | 7 02 | 0 06 | 0 19 | 11½ |
| | 9 51 | 0 05 | 0 02 | 10 |
| | 10 55 | 0 15 | 0 24 E | 10 |
| | 12 01 | 0 38 | 0 21 W | 11½ |
| 27th | A. M. | | | |
| | 1 4 | 0 29 | 0 18 | 11 |
| | 1 58 | 0 10 | 0 22 | 11 |
| | 5 6 | 0 14 W | 0 20 | 11 |
| | 6 2 | Zero | 0 04 | 12 |
| | 7 2 | 0 05 | 0 17 | 14 |
| | 10 | 0 27 | 0 21 | 9½ |
| | 10 30 | 0 09 | 0 21 | 9½ |
| | 11 2 | 0 17 | 0 20 | 9½ |
| | 11 37 | 0 18 | 0 19 | 9 |
| | 12 5 | 0 10 | 0 21 | 9 |
| | P. M. | | | |
| | 0 31 | 0 11 | 0 22 | 9 |
| | 1 0 | 0 11 | 0 24 | 9½ |
| | 2 0 | 0 16 E | 0 22 | 8½ |
| | 3 0 | 0 16 | 0 14 | 7½ |
| | 5 2 | 0 05 | 0 07 E | 13 |
| | 6 0 | 0 02 | 0 19 | 13 |
| | 7 8 | 0 05 | 0 19 | 13 |
| | 9 51 | 0 07 | 0 19 | 13½ |
| | 10 59 | 0 07 | 0 19 | 13½ |
| | 11 59 | 0 07 | 0 19 | 13½ |
| 28th | A. M. | | | |
| | 1 06 | 0 03 W | 0 18 | 14 |
| | 2 00 | Zero | ..... | 13½ |
| | 2 24 | 0 06 E | 0 18 | 14 |
| | 5 01 | 0 01 W | 0 19 | 13½ |
| | 6 01 | 0 02 E | 0 19 | 13½ |
| | 6 59 | 0 07 | 0 17 | 14 |
| | 9 38 | 0 16 W | 0 08 | 14 |
| | 10 02 | 0 16 | 0 12 | 11½ |
| | 10 49 | 0 19 | 0 27 | 8 |
| | 11 22 | 0 11 | 0 22 | 8 |
| | 12 01 | 0 22 | 0 01 | 8 |

| February. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 28th | h. m. | ° ′ | ° ′ | ° |
| | 1 03 | 0 15 W | 0 08 E | 11 |
| | 2 02 | 0 10 | 0 16 | 11 |
| | 5 01 | 0 13 E | 0 26 | 24½ |
| | 5 58 | 0 08 | 0 26 | 25½ |
| | 7 01 | 0 08 | 0 26 | 26½ |
| | 9 27 | 0 04 | 0 26 | 28½ |
| | 10 12 | 0 05 | 0 26 | 28½ |
| | 11 01 | 0 09 | 0 20 | 28½ |
| March. | 11 59 | 0 08 | 0 19 | 26 |
| 1st | A. M. | | | |
| | 1 03 | 0 05 | 0 12 | 26 |
| | 2 03 | 0 10 | 0 20 | 24 |
| | 5 5 | 0 05 | 0 18 | 21½ |
| | 6 01 | 0 19 W | 0 12 | 21½ |
| | 7 01 | 0 01 | 0 12 | 22½ |
| | 9 6 | 0 41 | 0 06 | 27 |
| | 9 32 | 1 01 | 0 04 | 26½ |
| | 10 05 | 1 34 | 0 10 W | 26 |
| | 10 32 | 1 40 | 0 14 | 26½ |
| | 11 00 | 1 27 | 1 01 | 27 |
| | 11 29 | 1 11 | 0 34 | 28½ |
| | 12 2 | 0 41 | 0 03 | 29½ |
| | P. M. | | | |
| | 0 58 | 1 07 | 0 33 | 29½ |
| | 1 32 | 0 12 | 0 08 E | 30 |
| | 2 07 | 0 18 E | 0 18 | 30½ |
| | 4 59 | 0 41 | 0 59 | 33 |
| | 5 59 | 0 13 | 0 38 | 33 |
| | 6 59 | 0 13 | 0 38 | 33 |
| | 9 01 | 0 20 | 0 22 | 34 |
| | 10 01 | 0 23 | 0 39 | 37 |
| | 11 04 | 0 33 | 0 47 | 38 |
| | 12 07 | 0 15 | 0 41 | 40 |
| 2d | A. M. | | | |
| | 1 02 | 0 20 | 0 37 | 39½ |
| | 1 52 | 0 46 | 1 14 | 39½ |
| | 2 24 | 0 24 | 0 39 | 39½ |
| | 3 01 | Zero. | 0 01 | 40 |
| | 5 04 | 0 11 | 0 18 | 40 |
| | 6 01 | Zero. | 0 16 | 40½ |
| | 7 01 | 0 28 W | 0 13 W | 41½ |
| | 10 02 | 0 43 | 0 19 | 31½ |
| | 10 32 | 0 37 | 0 11 | 30½ |
| | 11 01 | 0 32 | 0 10 | 30½ |
| | 11 32 | 0 40 | 0 14 | 31 |
| | 11 58 | 0 32 | 0 09 | 31½ |
| | P. M. | | | |
| | 0 32 | 0 49 | 0 18 | 32½ |
| | 1 02 | 0 37 | 0 10 | 34 |
| | 1 31 | 1 11 | 0 30 | 34 |
| | 1 46 | 0 53 | 0 08 | 35 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 2d | h. m. | ° ′ | ° ′ | ° |
| | 2 02 | 0 18 W | 0 08 E | 36 |
| | 5 06 | 0 17 E | 0 38 | 35½ |
| | 6 01 | 0 25 | 0 42 | 35½ |
| | 7 02 | 0 09 | 0 29 | 36½ |
| | 9 54 | 0 16 | 0 29 | 38 |
| | 10 51 | 0 21 | 0 43 | 38½ |
| | 12 02 | 0 46 | 0 43 | 38½ |
| 3d | A. M. | | | |
| | 1 5 | 0 12 | 0 35 | 40 |
| | 2 01 | 0 01 | 0 26 | 40 |
| | 5 07 | 0 01 W | 0 17 | 38 |
| | 6 01 | 0 02 | 0 17 | 38 |
| | 7 03 | 0 02 | 0 16 | 36½ |
| | 9 49 | 0 06 E | 0 41 | 29 |
| | 10 49 | 0 41 W | 0 09 W | 27 |
| | 11 12 | 1 16 | 0 51 | 26½ |
| | 11 23 | 2 03 | 1 40 | 26½ |
| | 11 42 | 1 09 | 1 20 | 26½ |
| | 11 57 | 0 40 | 0 50 | 26 |
| | P. M. | | | |
| | 1 1 | Zero. | 0 02 | 26 |
| | 1 26 | 0 27 | 0 12 | 26 |
| | 2 01 | 0 44 | 0 07 | 26 |
| | 2 29 | 0 04 E | 0 17 E | 26 |
| | 2 58 | 0 02 | 0 22 | 26 |
| | 5 1 | 0 18 W | 0 07 W | 25½ |
| | 6 1 | 0 02 | 0 21 E | 25½ |
| | 6 58 | 0 28 E | 0 24 | 25 |
| | 10 02 | 0 27 | 0 18 | 26½ |
| | 10 12 | 0 28 | 0 19 | 26½ |
| | 11 1 | 0 33 | 0 37 | 26½ |
| | 11 59 | 0 34 | 0 49 | 26½ |
| 4th | A. M. | | | |
| | 1 02 | Zero. | 0 21 | 27½ |
| | 1 28 | 0 02 W | 0 16 | 27½ |
| | 2 8 | 0 04 | 0 07 | 27½ |
| | 2 16 | ..... | 0 27 | 27½ |
| | 3 0 | 0 01 | ..... | 27 |
| | 5 6 | 0 03 E | 0 27 | 29 |
| | 6 01 | 0 24 | 0 40 | 32½ |
| | 7 2 | 0 31 W | 0 07 | 31 |
| | 9 32 | 0 29 | 0 02 W | 27½ |
| | 10 1 | 0 54 | 0 20 | 21½ |
| | 10 29 | 0 37 | 0 07 | 20½ |
| | 10 57 | 0 50 | 0 17 | 25½ |
| | 11 37 | 1 01 | 0 30 | 21 |
| | 12 2 | 0 59 | 0 44 | 26 |
| | P. M. | | | |
| | 1 02 | 0 06 | 0 09 E | 18 |
| | 1 27 | 0 34 | 0 14 W | 19 |
| | 1 58 | 0 58 | 0 33 | 19 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No. 1. | Needle No. 2. | |
| 1825. | P. M. | | | — |
| 4th | h. m. | ° ′ | ° ′ | ° |
| | 2 27 | 0 20 W | 0 08 W | 19½ |
| | 3 2 | 0 11 E | 0 17 E | 22 |
| | 5 4 | 0 11 | 0 10 | 29½ |
| | 5 58 | 0 04 | 0 07 | 31 |
| | 7 01 | 0 18 | 0 08 | 31½ |
| | 9 32 | 1 49 | 1 16 | 31½ |
| | 10 01 | 1 04 | 0 50 | 31½ |
| | 10 28 | 1 53 | 0 57 | 32 |
| | 10 59 | 0 31 | 0 52 | 32 |
| | 11 27 | 0. 16 | 0 29 | 33 |
| | 12 1 | 0 15 | 0 18 | 32 |
| 5th | A. M. | | | |
| | 0 59 | 0 20 | 0 18 | 30½ |
| | 1 59 | 0 20 | 0. 18 | 30 |
| | 2 13 | 0 20 | 0 31 | 29½ |
| | 5 5 | 0 03 | 0 23 | 27 |
| | 6 01 | 0 01 W | 0 19 | 27 |
| | 7 01 | 0 22 E | 0 25 | 27 |
| | 9 13 | 0 32 W | Zero. | 26½ |
| | 10 01 | 0 40 | 0 08 | 25½ |
| | 10 31 | 0 53 | 0 04 W | 25 |
| | 11 01 | 0 20 | 0 02 | 24 |
| | 12 03 | Zero. | 0 16 E | 21½ |
| | P. M. | | | |
| | 0 52 | 0 30 E | 0 06 | 17½ |
| | 1 31 | 0 30 | 0 49 | 17 |
| | 2 01 | 0 22 | 0 46 | 17 |
| | 2 28 | 0 13 | 0 51 | 18 |
| | 3 01 | 0 47 | 1 06 | 19½ |
| | 4 56 | 0 05 | 0 46 | 26½ |
| | 5 53 | 0 43 | 0 49 | 29 |
| | 6 52 | 0 16 | 0 36 | 31 |
| | 9 06 | 0 33 | 0 46 | 31 |
| | 9 56 | 0 33 | 0 41 | 31½ |
| | 10 33 | 0 33 | 0 47 | 31½ |
| | 11 1 | 0 24 | 0 47 | 31 |
| | 12 1 | 0 16 | 0 16 | 29 |
| 6th | A. M. | | | |
| | 1 02 | 0 21 | 0 31 | 29 |
| | 1 42 | 0 13 | 0 43 | 29 |
| | 2 04 | 0 13 | 0 26 | 29½ |
| | 2 42 | 0 11 | 0 28 | 28½ |
| | 3 12 | 0 24 | 0 20 | 28 |
| | 5 13 | 0 21 W | 0 21 W | 24½ |
| | 6 6 | 0 32 | 0 21 | 23 |
| | 7 01 | 0 32 | 0 30 | 23 |
| | 9 54 | 0 24 | 0 29 | 21½ |
| | 10 11 | 0 19 | 0 23 | 21½ |
| | 10 31 | 0 39 | 0 26 | 22½ |
| | 10 53 | 0 35 | 0 21 | 23½ |
| | 11 17 | 0 19 | 0 13 | 24 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No. 1. | Needle No. 2. | |
| 1825. | A. M. | | | — |
| 6th | h. m. | ° ′ | ° ′ | ° |
| | 12 04 | 0 04 E | Zero. | 25 |
| | P. M. | | | |
| | 1 02 | 0 26 | 0 21 E | 26 |
| | 2 01 | 0 54 | 0 37 | 26½ |
| | 5 09 | 0 08 | 0 31 | 33½ |
| | 6 02 | 0 08 | 0 37 | 33½ |
| | 7 02 | 0 13 | 0 41 | 34½ |
| | 9 59 | 0 16 | 0 36 | 36 |
| | 10 59 | 0 46 | 0 56 | 36 |
| | 12 | 0 24 | 0 56 | 36½ |
| 7th | A. M. | | | |
| | 1 04 | 0 11 | 0 39 | 36½ |
| | 1 58 | Zero. | 0 19 | 36½ |
| | 5 09 | 0 13 W | 0 16 | 36 |
| | 6 01 | 0 06 E | 0 08 | 36 |
| | 7 01 | 0 05 W | 0 01 | 36 |
| | 9 47 | 0 15 | 0 09 W | 34½ |
| | 10 22 | 0 21 | 0 27 | 25½ |
| | 10 43 | Zero. | 0 20 | 26 |
| | 11 6 | 0 17 | 0 11 | 20 |
| | 11 32 | 0 11 | 0 13 | 18 |
| | 12 01 | 0 12 | 0 02 | 25 |
| | P. M. | | | |
| | 0 57 | 0 08 E | 0 09 E | 21½ |
| | 1 30 | 0 20 | 0 17 | 21 |
| | 2 02 | 0 25 | 0 23 | 20½ |
| | 5 01 | 0 05 | 0 16 | 31½ |
| | 6 00 | 0 06 | 0 16 | 33 |
| | 6 58 | 0 10 | 0 16 | 32½ |
| | 9 59 | 0 09 | 0 16 | 33 |
| | 11 07 | 0 07 | 0 34 | 33½ |
| | 11 59 | 0 08 | 0 19 | 31 |
| 8th | A. M. | | | |
| | 1 04 | 0 01 | 0 37 | 29½ |
| | 1 31 | 0 08 | 0 22 | 29½ |
| | 2 02 | 0 06 | 0 36 | 29½ |
| | 2 47 | Zero. | 0 44 | 29½ |
| | 5 03 | 0 05 | 0 28 | 28½ |
| | 5 58 | 0 08 | 0 28 | 27½ |
| | 7 00 | 0 09 | 0 28 | 28 |
| | 9 26 | 0 39 W | 0 03 W | 26 |
| | 10 02 | 0 15 | 0 09 | 26 |
| | 10 30 | 0 41 | ..... | 24 |
| | 10 48 | ..... | 0 21 | 25 |
| | 11 01 | 0 45 | 0 29 | 25 |
| | 11 39 | 0 51 | 0 30 | 24½ |
| | 11 59 | 0 49 | 0 33 | 24½ |
| | 12 13 | 0 44 | 0 28 | 24½ |
| | P. M. | | | |
| | 1 02 | 0 20 | 0 21 | 22 |
| | 2 02 | 0 18 E | 0 08 E | 20½ |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2 | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 8th | h. m. | ° ′ | ° ′ | ° |
| | 5 05 | 0 16 E | 0 19 E | 27 |
| | 6 00 | 0 15 | 0 16 | 28½ |
| | 7 01 | 0 18 | 0 21 | 28½ |
| | 9 31 | 0 34 | 0 38 | 30½ |
| | 10 02 | 0 35 | 0 51 | 30½ |
| | 10 37 | 0 50 | 0 58 | 31½ |
| | 11 02 | 0 39 | 0 56 | 31 |
| | 11 42 | 0 45 | 0 48 | 31 |
| | 12 01 | 0 45 | 0 56 | 31 |
| 9th | A. M. | | | |
| | 1 02 | 0 36 | 0 57 | 30½ |
| | 2 06 | 0 27 | 0 36 | 31 |
| | 5 04 | 0 02 | 0 11 | 29½ |
| | 5 59 | 0 06 W | 0 05 | 28½ |
| | 7 01 | 0 18 | 0 05 W | 28 |
| | 8 58 | 0 31 | 0 18 | 26 |
| | 9 58 | 0 40 | 0 19 | 25 |
| | 10 59 | 0 25 | 0 08 | 23 |
| | 12 4 | 0 11 | 0 03 E | 22 |
| | P. M. | | | |
| | 0 57 | 0 27 E | 0 44 | 20½ |
| | 1 29 | 0 20 | 0 36 | 22 |
| | 2 04 | 0 05 | 0 28 | 22½ |
| | 2 41 | 0 06 | 0 39 | 23 |
| | 2 59 | 0 24 | 0 48 | 23 |
| | 5 03 | 0 27 | 0 42 | 26 |
| | 6 01 | 0 09 | 0 26 | 27 |
| | 7 01 | 0 09 | 0 23 | 27½ |
| | 9 02 | 0 11 | 0 29 | 28 |
| | 10 02 | 0 13 | 0 29 | 28½ |
| | 11 01 | 0 13 | 0 29 | 29 |
| | 12 8 | 0 19 | 0 29 | 29½ |
| 10th | A. M. | | | |
| | 1 4 | 0 08 | 0 26 | 29½ |
| | 1 37 | 0 04 | 0 18 | 29 |
| | 2 07 | 0 27 | 0 31 | 29 |
| | 2 42 | 0 20 | 0 26 | 29 |
| | 5 5 | 0 23 | 0 32 | 29 |
| | 6 6 | 0 13 | 0 20 | 29 |
| | 6 15 | ..... | 0 15 | 29 |
| | 7 00 | 0 20 | 0 15 | 29½ |
| | 10 5 | 1 09 W | 0 46 W | 21½ |
| | 10 31 | 0 05 | 0 44 | 21½ |
| | 11 3 | 0 52 | 0 37 | 17½ |
| | 11 27 | 0 36 | 0 19 | 16½ |
| | 12 8 | 0 11 | 0 02 E | 17 |
| | P. M. | | | |
| | 0 58 | 0 24 E | 0 09 | 15½ |
| | 2 5 | ..... | 0 27 | 16 |
| | 5 6 | 0 09 W | 0 01 | 25 |
| | 6 01 | 0 05 | 0 16 | 28½ |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 10th | h. m. | ° ′ | ° ′ | ° |
| | 7 01 | 0 04 E | 0 31 E | 30½ |
| | 9 54 | 0 13 | 0 19 | 32½ |
| | 10 56 | 0 13 | 0 19 | 32½ |
| | 11 56 | 0 13 | 0 17 | 32 |
| 11th | A. M. | | | |
| | 1 6 | 0 09 | 0 18 | 33 |
| | 2 01 | 0 04 | 0 17 | 33 |
| | 5 01 | 0 05 | 0 26 | 33½ |
| | 6 04 | 0 19 | 0 31 | 33½ |
| | 7 1 | 0 17 | 0 21 | 34 |
| | 9 57 | 0 41 W | 0 50 W | 17 |
| | 10 15 | 0 41 | 0 50 | 16 |
| | 10 32 | 0 47 | 0 50 | 13 |
| | 10 55 | 1 11 | 0 57 | 14 |
| | 11 32 | 2 06 | 1 23 | 14½ |
| | 11 59 | 2 06 | 1 23 | 16 |
| | P. M. | | | |
| | 1 01 | 1 37 | 0 54 | 16 |
| | 1 31 | 1 54 | 1 02 | 14½ |
| | 2 06 | 0 46 | 0 21 | 13½ |
| | 5 01 | 0 24 E | 0 29 E | 11½ |
| | 6 01 | 0 24 | 0 14 | 23½ |
| | 6 57 | 0 42 | 0 29 | 29 |
| | 9 56 | 0 44 | 0 53 | 32 |
| | 10 58 | 2 16 | 1 11 | 33 |
| | 11 0 | 1 14 | 2 16 | 33 |
| | 11 59 | 0 58 | 0 49 | 33 |
| 12th | A. M. | | | |
| | 1 02 | 1 15 | 1 08 | 33 |
| | 1 38 | 1 15 | 1 08 | 33 |
| | 2 02 | 1 15 | 1 11 | 33 |
| | 2 27 | 1 16 | 1 11 | 32½ |
| | 2 58 | 0 36 | 0 34 | 32 |
| | 5 01 | 0 09 | 0 18 | 33 |
| | 6 01 | 0 08 W | 0 02 W | 33 |
| | 6 58 | 0 21 E | 0 11 E | 33 |
| | 9 32 | 1 06 W | 0 31 W | 19½ |
| | 10 02 | 0 35 | 0 20 | 19 |
| | 10 26 | 1 09 | 0 32 | 18 |
| | 11 2 | 2 21 | 1 50 | 16½ |
| | 11 31 | 1 58 | 1 31 | 14½ |
| | 12 01 | 1 29 | 1 31 | 12 |
| | P. M. | | | |
| | 1 2 | 0 53 | 1 16 | 9½ |
| | 2 5 | 0 14 E | 0 09 | 11 |
| | 5 7 | 0 38 | 0 43 E | 23½ |
| | 6 01 | 0 38 | 0 59 | 27 |
| | 7 02 | 0 10 | 0 39 | 29½ |
| | 9 31 | 0 14 | 0 32 | 30½ |
| | 10 1 | 0 19 | 0 36 | 30½ |
| | 10 31 | 0 27 | 0 36 | 30½ |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M | | | — |
| 12th | h. m. | ° ′ | ° ′ | ° |
| | 11 01 | 1 01 E | 0 59 E | 30½ |
| | 11 31 | 1 11 | 1 08 | 30½ |
| | 12 01 | 1 07 | 1 22 | 30½ |
| 13th | A. M. | | | |
| | 0 57 | 0 33 | 0 36 | 32½ |
| | 2 6 | 0 16 | 0 28 | 32 |
| | 5 7 | 0 19 | 0 34 | 31½ |
| | 5 59 | 0 46 W | 0 01 W | 32 |
| | 7 4 | 0 18 E | 0 28 E | 32 |
| | 9 6 | 1 00 W | 0 17 W | 18 |
| | 9 33 | 0 44 | 0 14 | 17 |
| | 9 55 | 0 32 | 0 15 | 15 |
| | 10 32 | 1 23 | 0 56 | 14 |
| | 10 58 | 0 45 | 0 21 | 9 |
| | 11 32 | 0 34 | 0 49 | 6 |
| | 11 58 | 1 49 | 1 43 | 8 |
| | P. M. | | | |
| | 0 20 | 2 41 | 2 21 | 7 |
| | 0 47 | 0 10 E | 0 03 | 10 |
| | 1 4 | 0 49 W | 0 57 | 10½ |
| | 1 27 | 1 05 | 0 34 | 11 |
| | 1 57 | 2 19 | 1 24 | 10 |
| | 2 31 | 0 49 E | 0 40 E | 9½ |
| | 2 55 | 1 24 W | 0 29 W | 10½ |
| | 5 08 | 0 01 | 0 06 E | 21 |
| | 6 4 | 0 08 E | 0 21 | 26½ |
| | 7 01 | 0 05 | 0 11 | 28½ |
| | 8 59 | 0 15 | 0 16 | 31½ |
| | 10 04 | 0 15 | 0 14 | 31½ |
| | 11 03 | 0 24 | 0 19 | 31 |
| | 11 56 | 0 41 | 0 26 | 31 |
| 14th | A. M. | | | |
| | 1 01 | 1 09 | 0 57 | 32½ |
| | 1 29 | 0 51 | 0 42 | 32 |
| | 2 01 | 1 03 | 0 49 | 32½ |
| | 2 27 | 0 58 | 0 47 | 32½ |
| | 2 55 | 0 46 | 0 49 | 32½ |
| | 5 11 | 0 20 | 0 09 | 33 |
| | 5 59 | 0 46 | 0 15 | 33 |
| | 6 57 | 0 31 W | 0 31 W | 33 |
| | 9 28 | 1 38 | 1 08 | 19 |
| | 10 4 | 1 48 | 1 19 | 19 |
| | 10 29 | 1 48 | 1 19 | 15½ |
| | 11 4 | 1 48 | 1 20 | 9½ |
| | 11 19 | 1 46 | 1 20 | 10½ |
| | 12 06 | 1 07 | 1 26 | 12 |
| | P. M. | | | |
| | 0 15 | 1 54 | 1 41 | 10 |
| | 0 30 | 3 11 | 2 37 | 8 |
| | 0 32 | ..... | 3 04 | 8 |
| | 0 35 | ..... | 2 39 | 14 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 14th | h. m. | ° ′ | ° ′ | ° |
| | 0 39 | 2 39 W | 2 39 W | |
| | 0 43 | ..... | 2 26 | |
| | 0 48 | ..... | 2 21 | |
| | 0 52 | 2 07 | 2 10 | 14 |
| | 1 02 | ..... | 2 23 | |
| | 1 09 | 2 23 | 3 36 | 14 |
| | 1 16 | 2 40 | 2 37 | |
| | 1 54 | 3 34 | 2 44 | |
| | 2 2 | 3 32 | 2 44 | |
| | 2 11 | 2 55 | 2 44 | |
| | 2 59 | 2 00 | 1 48 | 14 |
| | 5 00 | 0 04 E | 0 12 | 25 |
| | 6 00 | 0 11 | 0 01 | 24 |
| | 6 59 | 0 21 | 0 03 | 26½ |
| | 9 29 | 0 21 | 0 03 E | 27 |
| | 10 29 | 0 23 | 0 03 | 31 |
| | 11 29 | 0 24 | 0 03 | 31 |
| | 11 59 | 0 26 | 0 03 | 31 |
| 15th | A. M. | | | |
| | 1 01 | 0 22 | 0 09 | 32 |
| | 2 12 | 0 11 | 0 06 | 32 |
| | 5 06 | 0 09 | 0 16 | 32½ |
| | 6 01 | Zero. | 0 02 W | 32 |
| | 7 00 | 0 15 W | 0 02 | 32 |
| | 9 58 | 0 25 | 0 12 | 18½ |
| | 10 21 | 0 30 | 0 18 | 18½ |
| | 11 09 | 0 16 | 0 07 | 11 |
| | 11 35 | 0 11 | 0 06 | 10 |
| | 12 03 | 0 11 | 0 06 | 9 |
| | P. M. | | | |
| | 1 00 | 0 26 | 0 07 | 13½ |
| | 1 29 | 0 05 E | 0 18 | 14 |
| | 1 53 | 0 08 | 0 06 E | 14 |
| | 2 32 | 0 10 | 0 11 | 15 |
| | 4 30 | ..... | 0 29 W | 20 |
| | 4 40 | 0 44 W | 0 08 | 19 |
| | 4 50 | ..... | 0 14 | 19 |
| | 5 15 | 0 11 | Zero | 19 |
| | 5 30 | Zero | 0 01 E | 20 |
| | 5 45 | ..... | 0 23 | 21 |
| | 6 10 | 0 04 | ..... | 23 |
| | 7 11 | 0 26 E | 0 46 | 23 |
| | 9 04 | 0 20 | 0 23 | 25 |
| | 10 03 | 0 16 | 0 22 | 25 |
| | 11 01 | 0 14 | 0 23 | 25 |
| | 12 04 | 0 14 | 0 23 | 25 |
| 16th | A. M. | | | |
| | 1 04 | 0 04 | 0 16 | 26 |
| | 1 31 | 0 04 W | 0 08 | 27 |
| | 2 02 | 0 01 E | 0 13 | 26½ |
| | 2 31 | 0 03 | 0 13 | 26½ |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 16th | h. m. | ° ′ | ° ′ | ° |
| | 3 02 | 0 03 E | 0 13 E | 26 |
| | 5 05 | 0 09 W | 0 13 | 26 |
| | 5 51 | 0 03 E | 0 13 | 27 |
| | 6 59 | 0 18 | 0 08 | 27 |
| | 9 37 | 0 20 W | 0 02 | 18 |
| | 10 07 | 0 33 | 0 14 W | 18 |
| | 10 52 | 0 30 | 0 33 | 16 |
| | 11 29 | 0 22 | 0 22 | 14½ |
| | 12 4 | 0 21 | 0 11 | 16½ |
| | P. M. | | | |
| | 0 38 | 0 39 | 0 26 | 21 |
| | 1 02 | 0 56 | 0 37 | 21 |
| | 1 33 | 0 57 | 0 43 | 21 |
| | 2 06 | 1 01 | 0 53 | 20½ |
| | 2 13 | 0 49 | 0 39 | 20 |
| | 2 17 | 0 40 | 0 31 | 20 |
| | 3 03 | 0 40 | 0 31 | 20 |
| | 4 03 | 0 15 | 0 15 | 21 |
| | 5 07 | 0 17 | 0 03 | 22½ |
| | 6 01 | 0 15 | Zero. | 25½ |
| | 7 01 | 0 04 E | 0 12 E | 26½ |
| | 9 32 | 0 24 | 0 23 | 27½ |
| | 10 01 | 0 21 | 0 26 | 27½ |
| | 10 32 | 0 11 | 0 18 | 27 |
| | 11 01 | 0 15 | 0 21 | 26½ |
| | 11 32 | 0 15 | 0 26 | 27 |
| | 12 01 | 0 18 | 0 26 | 27 |
| 17th | A. M. | | | |
| | 1 5 | 0 33 | 0 42 | 27 |
| | 1 31 | 1 06 | 0 58 | 26½ |
| | 1 57 | 0 57 | 0 45 | 26 |
| | 2 30 | ..... | 0 31 | 27½ |
| | 2 57 | 0 32 | ..... | 25 |
| | 3 58 | 0 11 | 0 23 | 25½ |
| | 5 01 | 0 11 | 0 23 | 25½ |
| | 6 01 | 0 11 | 0 22 | 26½ |
| | 7 01 | 0 11 W | 0 01 W | 26½ |
| | 9 28 | 0 30 | 0 12 | 23 |
| | 10 01 | 0 49 | 0 28 | 22½ |
| | 10 32 | 0 31 | 0 23 | 22 |
| | 11 03 | 0 22 | 0 20 | 22 |
| | 12 06 | 0 02 E | 0 02 | 22 |
| | P. M. | | | |
| | 1 01 | 0 42 W | 0 21 | 21½ |
| | 1 29 | 0 16 | 0 06 E | 21 |
| | 2 01 | 0 16 | 0 01 | 18½ |
| | 2 29 | 0 19 | 0 02 | 19 |
| | 3 00 | 0 55 | 0 14 | 20½ |
| | 3 42 | 0 39 | 0 14 | 20½ |
| | 5 01 | 0 24 | 0 03 | 22½ |
| | 5 56 | 0 01 | 0 16 | 22½ |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P . M. | | | — |
| 17th | h. m. | ° ′ | ° ′ | ° |
| | 7 01 | 0 21 E | 0 26 E | 25 |
| | 9 22 | 0 35 | 0 36 | 27 |
| | 9 57 | 0 22 | 0 35 | 27 |
| | 10 24 | 0 30 | 0 35 | 27 |
| | 11 01 | 0 27 | 0 35 | 27 |
| | 11 56 | 0 30 | 0 35 | 27 |
| 18th | A. M. | | | |
| | 1 01 | 0 24 | 0 35 | 27 |
| | 1 25 | 0 24 | 0 28 | 27 |
| | 2 02 | 0 21 | 0 26 | 26½ |
| | 2 34 | 0 06 | 0 19 | 26½ |
| | 3 01 | 0 01 | 0 18 | 26½ |
| | 5 6 | 0 14 | 0 11 | 26½ |
| | 6 01 | 0 14 | 0 16 | 26½ |
| | 7 01 | 0 14 W | 0 04 W | 26½ |
| | 9 59 | 0 15 | 0 01 | 14½ |
| | 10 05 | 0 54 | 0 44 | 13 |
| | 10 33 | 0 59 | 0 50 | 11½ |
| | 10 58 | 0 48 | 0 53 | 12 |
| | 11 24 | 0 33 | 0 52 | 13 |
| | 11 31 | 0 29 | 0 26 | 12 |
| | 11 57 | 0 29 | 0 26 | |
| | P. M. | | | |
| | 0 35 | 0 59 | 0 53 | 13½ |
| | 0 56 | 0 59 | 0 53 | 13½ |
| | 1 21 | 0 22 | 0 38 | 9 |
| | 1 27 | ..... | 0 24 | 13 |
| | 2 06 | 0 41 | 0 18 | 9½ |
| | 3 01 | 1 04 | 0 38 | 13½ |
| | 3 11 | 1 04 | 0 34 | 14 |
| | 3 31 | 0 44 | 0 33 | 14 |
| | 5 5 | 0 01 E | 0 18 E | 16 |
| | 6 02 | 0 23 W | 0 09 | 21 |
| | 7 02 | 0 01 E | 0 28 | 23 |
| | 9 02 | 0 24 | 0 32 | 25½ |
| | 9 56 | 0 24 | 0 32 | 25½ |
| | 11 6 | 1 40 | 1 11 | |
| | 11 9 | ..... | 1 27 | |
| | 11 10 | ..... | 1 37 | |
| | 11 11 | . .... | 1 46 | |
| | 11 13 | 2 16 | | |
| | 11 17 | ..... | 1 56 | 23 |
| | 11 19 | 2 16 | 1 56 | 24½ |
| | 11 58 | 1 22 | 1 19 | 23 |
| 19th | A. M. | | | |
| | 1 02 | 2 08 | 2 13 | 23½ |
| | 1 20 | 2 08 | 1 59 | 23½ |
| | 2 01 | 1 13 | 1 29 | 23½ |
| | 3 2 | 1 36 | 1 31 | 23½ |
| | 3 10 | 1 36 | ..... | 23 |
| | 5 04 | 0 31 | 0 51 | 24½ |

| March. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No. 1. | Needle No. 2. | |
| 1825. | A. M. | | | — |
| 19th | h. m. | ° ′ | ° ′ | ° |
| | 6 09 | 0 19 W | Zero | 26 |
| | 7 0 | 0 28 | 0 23 W | 25½ |
| | 8 59 | 0 41 | 0 32 | 13½ |
| | 9 34 | 0 44 | 0 39 | 14½ |
| | 9 58 | 0 50 | 0 42 | 13½ |
| | 11 0 | 0 26 | 0 41 | 11½ |
| | 11 36 | 1 15 | 1 09 | 9 |
| | 12 11 | 2 36 | 1 46 | 12 |
| | P. M. | | | |
| | 0 29 | 2 49 | 2 08 | 13 |
| | 0 52 | 3 40 | 2 49 | 15 |
| | 1 8 | 4 20 | 3 24 | 15 |
| | 1 21 | 4 02 | 3 01 | 16 |
| | 1 43 | 3 04 | 2 43 | 14½ |
| | 2 01 | 3 00 | 2 32 | 14½ |
| | 2 31 | 2 59 | 2 32 | 16 |
| | 2 57 | 3 19 | 3 02 | 14 |
| | 3 13 | 2 20 | 2 43 | 15 |
| | 3 42 | 1 26 | 1 14 | 16½ |
| | 5 6 | 0 01 | 0 22 | 20½ |
| | 6 01 | 0 19 | 0 05 | 21 |
| | 7 01 | 0 23 E | 1 03 E | 21½ |
| | 9 4 | 2 16 | 1 53 | 21½ |
| | 10 01 | 2 08 | 1 58 | 21½ |
| | 10 16 | 2 28 | 2 02 | 21½ |
| | 11 3 | 1 51 | 1 53 | 21½ |
| | 12 0 | 1 17 | 1 09 | 21½ |
| 20th | A. M. | | | |
| | 5 14 | 0 29 | 0 40 | 23½ |
| | 6 06 | 0 06 | 0 19 | 24 |
| | 7 02 | 0 14 | Zero | 23 |
| | 7 55 | ..... | 0 22 W | 23 |
| | 9 26 | 0 49 W | 0 53 | 17 |
| | 9 59 | 1 03 | 1 07 | 15½ |
| | 10 31 | 0 40 | 0 44 | 16½ |
| | 11 1 | 1 39 | 1 20 | 15½ |
| | 11 31 | 2 25 | 1 57 | 11 |
| | 11 46 | 2 57 | 2 38 | 11 |
| | 12 01 | 2 54 | 2 34 | 12 |
| | P. M. | | | |
| | 0 16 | 1 39 | 2 01 | 13½ |
| | 0 47 | 1 19 | 1 34 | 15 |
| | 1 0 | ..... | 0 44 | 15 |
| | 1 33 | 1 07 | 1 01 | 14½ |
| | 2 00 | 0 30 | 0 29 | 14 |
| | 2 27 | 0 49 | 0 42 | 15 |
| | 3 14 | 0 11 | 0 25 | 13½ |
| | 5 16 | 0 30 | 0 05 | 19 |
| | 6 02 | 0 30 | 0 04 | 23 |
| | 7 01 | 0 29 | 0 32 | 24 |
| | 9 30 | 0 11 E | 0 36 | 24½ |

| March. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No. 1. | Needle No. 2. | |
| 1825. | P. M. | | | — |
| 20th | h. m. | ° ′ | ° ′ | ° |
| | 10 06 | 0 06 E | 0 08 W | 24 |
| | 10 31 | 0 01 | 0 06 | 24 |
| | 11 01 | 0 01 W | 0 16 | 24 |
| | 11 39 | 0 01 | 0 16 | 24 |
| | 12 04 | 0 03 | ..... | 24 |
| 21st | A. M. | | | |
| | 1 03 | 0 20 E | 0 22 E | 35 |
| | 2 05 | 0 25 | 0 33 | 25 |
| | 2 21 | 0 25 | 0 41 | 25 |
| | 3 03 | 1 07 | 0 56 | 25 |
| | 3 59 | 1 53 | 1 32 | 24½ |
| | 4 16 | 1 04 | 1 01 | 25 |
| | 5 14 | 0 51 W | 0 08 W | 24 |
| | 6 10 | 0 38 E | 0 46 E | 22½ |
| | 6 20 | 0 38 | 0 56 | 23 |
| | 7 01 | 0 14 W | 0 19 W | 22 |
| | 7 19 | 0 29 | 0 36 | 22 |
| | 7 56 | 1 31 | 1 21 | 21½ |
| | 9 00 | 0 08 E | 0 17 | 21 |
| | 9 29 | 1 30 W | 1 08 | 21 |
| | 9 59 | 1 02 | 0 42 | 21½ |
| | 10 28 | 0 41 | 0 34 | 22 |
| | 11 4 | 0 41 | 0 34 | 22 |
| | 11 28 | 0 46 | 0 11 | 18½ |
| | 12 0 | 0 10 | 0 08 | 19 |
| | P. M. | | | |
| | 1 01 | 0 12 | 0 03 | 19 |
| | 1 26 | 0 19 | 0 28 | 19 |
| | 2 4 | 1 32 | 0 42 | 19 |
| | 2 26 | 0 02 E | 0 04 | 19 |
| | 3 07 | 0 12 | 0 06 E | 19 |
| | 3 50 | 0 01 W | ..... | 18 |
| | 5 3 | 0 15 E | 0 16 | 19 |
| | 5 56 | 0 15 | 0 18 | 22½ |
| | 6 56 | 0 31 | 0 38 | 25 |
| | 9 3 | 1 17 | 1 07 | 30 |
| | 10 1 | 1 17 | 1 07 | 30 |
| | 10 58 | 1 17 | 1 07 | 30½ |
| | 12 00 | 1 17 | 0 51 | 32 |
| 22d | A. M. | | | |
| | 1 1 | 1 20 | 1 32 | 32 |
| | 1 32 | 1 07 | 1 13 | 32 |
| | 2 4 | 0 44 | 0 51 | 32 |
| | 2 55 | 1 01 | 1 26 | 32 |
| | 5 12 | 0 39 W | 0 10 | 29 |
| | 6 01 | 0 44 | 0 33 W | 30 |
| | 6 20 | 0 06 E | | |
| | 7 01 | 0 27 | 0 26 E | 27½ |
| | 9 44 | 0 50 W | 0 34 W | 8½ |
| | 10 01 | 0 50 | 0 34 | 9 |
| | 10 06 | 0 35 | ..... | 3 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 22d | h. m. | ° ′ | ° ′ | ° |
| | 11 09 | ..... | 0 26 W | 5½ |
| | 11 33 | ..... | 0 50 | 5 |
| | 11 46 | 1 19 W | 0 54 | 5 |
| | 12 02 | 0 54 | 0 37 | 5 |
| | P. M. | | | |
| | 1 19 | 0 06 E | 0 04 | 5 |
| | 2 01 | 0 38 | 0 17 E | 5 |
| | 3 01 | 0 51 | 0 27 | 5 |
| | 5 0 | 0 23 W | 0 02 W | 12½ |
| | 6 04 | 0 15 | 0 12 E | 20 |
| | 7 00 | 0 06 | 0 06 | 25½ |
| | 9 30 | 0 21 E | 0 22 | 29 |
| | 9 58 | 0 21 | 0 22 | 28 |
| | 10 58 | 0 34 | 0 31 | 30 |
| | 12 0 | 0 52 | 0 45 | 30½ |
| 23d | A. M. | | | |
| | 0 31 | 0 47 | 0 35 | 31½ |
| | 1 03 | 0 36 | 0 35 | 31½ |
| | 2 2 | 0 44 | 0 56 | 32 |
| | 3 2 | 0 34 | 0 29 | 32 |
| | 5 04 | 0 05 | 0 28 | 31½ |
| | 6 0 | 0 15 W | 0 11 W | 31½ |
| | 7 01 | 0 21 E | 0 06 E | 28½ |
| | 8 56 | 0 12 W | 0 22 W | 17½ |
| | 9 31 | 0 19 | 0 24 | 12 |
| | 10 10 | 0 32 | 0 29 | 10½ |
| | 11 2 | 1 00 | 1 13 | 8 |
| | 12 4 | 1 43 | 1 24 | 5 |
| | P. M. | | | |
| | 0 29 | 1 32 | 1 22 | 5 |
| | 0 52 | 1 40 | 1 24 | 2½ |
| | 1 16 | 2 19 | 1 30 | 6½ |
| | 1 42 | 1 27 | 1 09 | 6½ |
| | 2 04 | 1 06 | 1 04 | 7 |
| | 2 47 | 0 42 E | 0 40 E | 11½ |
| | 3 50 | 0 16 | 0 22 | 9 |
| | 5 0 | 0 10 | 0 20 | 15 |
| | 6 1 | 0 02 W | 0 17 | 22 |
| | 7 01 | 0 10 E | 0 16 | 32 |
| | 9 05 | 0 21 | 0 23 | 30½ |
| | 9 44 | 0 27 | 0 31 | 31 |
| | 10 23 | 0 27 | 0 31 | 31 |
| | 11 5 | 0 27 | 0 31 | 31 |
| | 12 2 | 0 40 | 0 40 | 32 |
| 24th | A. M. | | | |
| | 1 01 | 0 23 | 0 22 | 33 |
| | 1 31 | 0 31 | 0 56 | 33 |
| | 2 01 | 0 15 | 0 27 | 33½ |
| | 2 33 | 0 04 | 0 09 | 33½ |
| | 3 04 | 0 25 | 0 26 | 33½ |
| | 5 01 | 0 20 | 0 17 | 34 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 24th | h. m. | ° ′ | ° ′ | ° |
| | 6 01 | 0 16 W | 0 09 W | 34 |
| | 7 00 | 0 14 E | 0 22 E | 30½ |
| | 7 16 | 0 22 W | 0 20 W | 30 |
| | 9 26 | 1 06 | 1 01 | 16 |
| | 10 4 | 0 33 | 0 49 | 13 |
| | 10 30 | 0 43 | 0 54 | 12½ |
| | 11 03 | 0 39 | 0 19 | 12½ |
| | 11 31 | 0 17 | 0 13 | 11½ |
| | 12 01 | 0 09 | 0 04 | 10½ |
| | P. M. | | | |
| | 1 04 | 0 20 E | Zero | 11 |
| | 2 01 | 0 31 | 0 09 E | 8½ |
| | 2 58 | 0 31 | 0 09 | 8½ |
| | 5 01 | 0 30 | 0 09 | 15½ |
| | 6 01 | 0 30 | 0 25 | 21½ |
| | 7 01 | 0 26 | 0 38 | 27½ |
| | 7 31 | 0 21 | 0 38 | 28½ |
| | 8 01 | 0 01 | 0 38 | 28½ |
| | 9 30 | 0 09 | 0 28 | 32½ |
| | 10 01 | 0 04 | 0 22 | 32½ |
| | 10 31 | 0 11 | 0 32 | 33½ |
| | 11 16 | 0 02 W | 0 29 | 33½ |
| 25th | A. M. | | | |
| | 0 29 | 0 02 | 0 29 | 34½ |
| | 1 06 | 0 11 E | 0 50 | 34½ |
| | 2 06 | 0 09 | 0 39 | 34½ |
| | 2 30 | 0 01 W | | |
| | 3 2 | Zero | 0 17 | 35½ |
| | 5 3 | 0 12 | 1 18 | 35½ |
| | 6 01 | 0 12 | 0 06 | 35½ |
| | 6 59 | 0 06 E | 0 06 | 31½ |
| | 7 15 | 0 03 W | ..... | 30 |
| | 9 2 | 0 21 | 0 24 W | 18 |
| | 10 2 | 0 31 | 0 31 | 20½ |
| | 11 5 | 0 33 | 0 31 | 17 |
| | 11 32 | 0 20 | 0 29 | 15 |
| | 12 4 | 0 15 | 0 13 | 16½ |
| | P. M. | | | |
| | 1 1 | 0 09 E | 0 06 E | 14½ |
| | 1 26 | 0 14 | 0 11 | 15 |
| | 2 3 | 0 38 | 0 46 | 9 |
| | 2 31 | 0 38 | 0 56 | 10 |
| | 3 01 | 0 31 | 1 01 | 11½ |
| | 5 01 | 0 14 | 0 47 | 20½ |
| | 6 01 | 0 14 | 0 47 | 22½ |
| | 7 04 | 0 14 | 0 47 | 27½ |
| | 9 13 | 0 04 | 0 34 | 32 |
| | 9 59 | 0 09 | 0 30 | 30 |
| | 11 00 | 0 17 | 0 34 | 30 |
| | 11 58 | 0 11 | 0 29 | 30 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 26th | h. m. | ° ′ | ° ′ | ° |
| | 1 01 | 0 04 E | 0 26 E | 29 |
| | 1 30 | 0 04 | 0 17 | 29 |
| | 2 04 | 0 04 | 0 29 | 28½ |
| | 2 34 | 0 14 | 0 29 | 28½ |
| | 3 11 | 0 13 | 0 37 | 28½ |
| | 5 04 | 0 01 | 0 20 | 28 |
| | 6 01 | 0 01 | 0 17 | 26 |
| | 7 02 | 0 01 | 0 14 W | 26 |
| | 10 01 | 0 03 W | 0 20 | 13 |
| | 10 31 | 0 34 | 0 28 | 16 |
| | 11 1 | 0 29 | 0 23 | 14 |
| | 11 55 | 0 15 | 0 18 | 11½ |
| | P. M. | | | |
| | 0 31 | 0 02 | 0 08 | 13½ |
| | 1 05 | 0 05 E | 0 01 | 14½ |
| | 2 05 | 0 29 | 0 16 E | 14½ |
| | 2 57 | 0 47 | 0 21 | 14 |
| | 5 06 | Zero | 0 04 W | 18 |
| | 6 01 | 0 04 W | 0 10 E | 21 |
| | 7 03 | 0 01 | 0 16 | 22½ |
| | 9 03 | 0 13 E | 0 28 | 23 |
| | 9 58 | 0 08 | 0 18 | 23 |
| | 10 58 | 0 41 | 0 34 | 23½ |
| | 12 01 | 0 29 | 0 29 | 24 |
| 27th | A. M. | | | |
| | 1 05 | 0 29 | 0 29 | 24 |
| | 2 05 | 0 32 | 0 28 | 24 |
| | 3 05 | 0 32 | 0 38 | 23½ |
| | 5 06 | 0 05 W | 0 04 W | 23 |
| | 6 01 | 0 14 | 0 20 | 22½ |
| | 7 01 | 0 20 | 0 20 | 21 |
| | 9 17 | 0 06 | 0 13 | 15½ |
| | 9 33 | 0 23 | 0 17 | 14 |
| | 9 55 | 0 18 | 0 22 | 13 |
| | 11 00 | 0 39 | 0 39 | 8½ |
| | 12 10 | 0 31 | 0 25 | 6½ |
| | P. M. | | | |
| | 1 00 | 0 50 | 1 02 | 5 |
| | 1 27 | 0 32 | 0 24 | 7 |
| | 1 57 | 0 42 | 0 32 | 8 |
| | 2 29 | 0 50 | 0 40 | 9½ |
| | 3 01 | 0 19 | 0 21 | 8½ |
| | 5 6 | 0 21 E | 0 20 | 14 |
| | 5 59 | 0 22 | 0 17 E | 16 |
| | 7 01 | 0 21 | 0 17 | 19½ |
| | 9 01 | 0 21 | 0 13 | 22½ |
| | 9 58 | 0 27 | 0 19 | 22½ |
| | 10 56 | 0 42 | 0 35 | 24 |
| | 12 06 | 0 59 | 0 52 | 25 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 28th | h. m. | ° ′ | ° ′ | ° |
| | 1 04 | 0 32 E | 0 56 E | 26½ |
| | 1 31 | 0 26 | 0 26 | 26½ |
| | 2 0 | 0 01 | 0 26 | 27 |
| | 2 32 | 0 31 | 0 26 | 27 |
| | 3 05 | 0 36 | 0 26 | 27 |
| | 5 01 | 0 11 | 0 17 | 28 |
| | 6 7 | 0 11 | 0 11 | 28½ |
| | 7 01 | 0 11 | 0 06 | 21½ |
| | 9 29 | 0 18 W | 0 03 W | 8½ |
| | 10 3 | 0 30 E | 0 16 E | 9 |
| | 10 31 | 0 11 W | 0 02 | 7½ |
| | 11 1 | 0 20 | 0 18 W | 5 |
| | 11 33 | 0 40 | 0 21 | 4½ |
| | 12 01 | 0 36 | 0 08 | 5 |
| | P. M. | | | |
| | 1 10 | 0 44 | 0 25 | 9 |
| | 1 36 | 0 39 | 0 25 | 9 |
| | 2 05 | 0 47 | 0 25 | 10 |
| | 2 42 | 0 35 | 0 25 | 9½ |
| | 3 01 | 0 28 | 0 19 | 10 |
| | 5 03 | Zero | 0 01 | 14½ |
| | 6 04 | Zero | 0 01 | 18 |
| | 7 7 | Zero | 0 01 | 19 |
| | 9 31 | 0 11 E | 0 12 E | 22 |
| | 10 01 | 0 11 | 0 16 | 22 |
| | 10 31 | 0 06 | 0 31 | 23 |
| | 11 3 | 0 14 | 0 26 | 23½ |
| | 11 29 | 0 09 | 0 26 | 24 |
| | 12 01 | 0 01 | 0 06 | 24 |
| 29th | A. M. | | | |
| | 0 58 | 0 17 | 0 22 | 25 |
| | 2 04 | 0 10 | 0 12 | 25 |
| | 3 01 | 0 07 | 0 12 | 26 |
| | 4 05 | 0 06 | 0 12 | 27 |
| | 5 04 | 0 05 | 0 12 | 26 |
| | 6 01 | 0 05 | 0 12 | 26 |
| | 7 04 | 0 07 W | 0 08 W | 22½ |
| | 9 01 | 0 47 | 0 36 | 14 |
| | 10 01 | 1 00 | 0 40 | 8 |
| | 10 36 | ..... | 0 13 | 6½ |
| | 10 59 | 0 22 | | |
| | 11 33 | 0 06 E | 0 12 E | 6½ |
| | 11 59 | 0 49 | 0 33 | 8 |
| | P. M. | | | |
| | 0 59 | 2 00 | 1 42 | 6½ |
| | 1 29 | 2 20 | 1 57 | 4½ |
| | 2 00 | 1 21 | 1 36 | 3½ |
| | 2 27 | 1 32 W | 0 21 W | 5 |
| | 3 1 | 1 23 | 0 33 | 6 |
| | 3 35 | 0 03 E | 0 01 E | 4½ |
| | 5 3 | 0 35 | 0 38 | 10 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 29th | h. m. | ° ′ | ° ′ | ° |
| | 6 5 | 0 20 E | 0 31 E | 16½ |
| | 7 4 | 0 20 | 0 31 | 22 |
| | 9 13 | 1 27 | 1 11 | 26 |
| | 10 4 | 0 34 | 0 37 | 27 |
| | 10 33 | 0 21 | 0 32 | 28 |
| | 10 37 | ..... | 0 46 | 28 |
| | 10 57 | 0 36 | | |
| | 12 04 | 0 49 | 0 46 | 27 |
| 30th | A. M. | | | |
| | 1 01 | 0 05 W | 0 04 W | 25½ |
| | 1 36 | 0 15 | 0 04 | 26 |
| | 2 01 | 0 41 E | 0 20 E | 26 |
| | 2 31 | 0 51 | 0 36 | 26½ |
| | 3 07 | 0 37 | 0 47 | 28 |
| | 3 42 | 0 21 | 0 17 | 28 |
| | 5 03 | 2 03 | 1 21 | 29½ |
| | 6 01 | 0 16 | 0 13 W | 30 |
| | 6 59 | 0 30 W | 0 40 | 21 |
| | 9 59 | 0 45 | 1 12 | 9½ |
| | 10 29 | 1 15 | 1 05 | 6 |
| | 11 3 | 0 45 | 0 40 | 2 |
| | 11 57 | 0 34 | 0 35 | 3 |
| | P. M. | | | |
| | 1 04 | 1 16 | 1 07 | 2½ |
| | 2 01 | 0 52 | 0 46 | 1½ |
| | 3 11 | 0 23 | 0 03 | 2½ |
| | 3 31 | 0 03 E | 0 02 E | 4 |
| | 5 02 | 0 21 | 0 16 | 8½ |
| | 5 59 | 0 21 | 0 16 | 20 |
| | 7 04 | 0 05 | 0 16 | 24 |
| | 9 05 | 0 33 | 0 37 | 27½ |
| | 9 59 | 0 46 | 0 40 | 28½ |
| | 11 01 | 1 01 | 0 54 | 29 |
| | 12 01 | 1 14 | 1 07 | 29 |
| 31st | A. M. | | | |
| | 1 04 | 0 51 | 1 09 | 31 |
| | 2 3 | 0 08 | 0 06 | 31 |
| | 3 4 | 0 08 | 0 06 | 31 |
| | 5 6 | 0 19 W | 0 16 | 31 |
| | 6 01 | 0 26 | 0 08 W | 30½ |
| | 7 01 | 0 20 E | 0 11 E | 29 |
| | 8 54 | 1 29 W | 1 12 W | 16½ |
| | 9 58 | 0 42 | 0 44 | 12 |
| | 10 33 | 1 13 | 1 08 | 12 |
| | 11 0 | 1 46 | 1 24 | 11½ |
| | 11 29 | 1 43 | 1 14 | 11½ |
| | 12 01 | 3 17 | 2 43 | 10 |
| | P. M. | | | |
| | 0 56 | 1 49 | 1 29 | 10 |
| | 1 29 | 2 00 | 1 23 | 12 |
| | 2 01 | 0 13 E | 0 12 | 11 |

| March. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 31st | h. m. | ° ′ | ° ′ | ° |
| | 2 30 | 0 10 W | 0 07 W | 10½ |
| | 3 01 | 0 04 E | 0 02 E | 11 |
| | 5 01 | 0 09 | 0 02 | 13½ |
| | 6 01 | 0 09 | 0 02 | 24 |
| | 7 02 | ..... | 0 02 | 24 |
| | 7 20 | 0 04 | ..... | 26 |
| | 8 57 | 0 26 | 0 34 | 30 |
| | 10 1 | 0 49 | 0 43 | 31 |
| | 10 58 | 0 51 | 0 46 | 31 |
| April | 12 2 | 0 35 | 0 35 | 32 |
| 1st | A. M. | | | |
| | 1 4 | 0 17 | 0 09 | 32½ |
| | 1 30 | 0 20 | 0 58 | 31½ |
| | 2 01 | 0 55 | 0 36 | 31½ |
| | 2 31 | 0 01 W | 0 28 | 31½ |
| | 3 06 | 0 58 E | 1 00 | 32½ |
| | 3 39 | 1 11 | 1 29 | 32½ |
| | 3 59 | 0 55 | 1 09 | 32½ |
| | 5 04 | 0 55 | 1 10 | 33 |
| | 6 03 | 0 43 W | 0 13 W | 33 |
| | 7 5 | 0 15 E | 0 02 | 30½ |
| | 9 30 | 2 31 W | 1 22 | 10½ |
| | 10 01 | 2 04 | 1 33 | 9 |
| | 10 32 | 1 43 | 1 28 | 9 |
| | 11 01 | 1 14 | 0 57 | 7½ |
| | 11 26 | 0 39 | 0 23 | 6½ |
| | 12 0 | 0 50 | 0 44 | 8 |
| | P. M. | | | |
| | 0 57 | 2 14 | 1 40 | 9½ |
| | 1 30 | 1 33 | 1 13 | 9 |
| | 1 59 | 0 23 E | 0 06 E | 10½ |
| | 3 01 | 0 37 W | 0 34 | 12½ |
| | 3 58 | 0 45 E | 0 14 | 5½ |
| | 5 01 | 0 45 | 0 14 | 8½ |
| | 6 01 | 0 11 | 0 01 W | 9½ |
| | 7 2 | 0 43 | 0 50 E | 25 |
| | 9 30 | 1 05 | 0 56 | 30 |
| | 10 04 | 1 51 | 1 31 | 30 |
| | 10 42 | 1 04 | 0 59 | 30½ |
| | 11 4 | 1 45 | 2 23 | 30½ |
| | 11 29 | 1 53 | 2 23 | 31 |
| | 12 3 | 1 12 | 2 00 | 32 |
| 2d | A. M. | | | |
| | 1 01 | 1 33 | 1 57 | 32½ |
| | 2 00 | 1 21 | 1 47 | 32½ |
| | 2 56 | 1 19 | 1 11 | 33½ |
| | 5 03 | 0 01 | 0 31 | 33½ |
| | 6 01 | 0 23 W | 0 02 | 32½ |
| | 7 03 | 0 20 E | 0 02 | 32½ |
| | 8 58 | 1 02 W | 0 48 W | 14½ |
| | 9 58 | 0 58 | 0 41 | 13 |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 2d | h. m. | ° ′ | ° ′ | ° |
| | 10 29 | 1 09 W | 0 49 W | 12 |
| | 10 54 | 1 22 | 1 03 | 12 |
| | 11 30 | 0 39 | 0 30 | 15 |
| | 12 01 | 0 50 | 0 32 | 14½ |
| | P. M. | | | |
| | 0 56 | 1 00 | 0 33 | 12½ |
| | 1 26 | 0 05 | 0 06 E | 15 |
| | 2 01 | 0 56 E | 0 39 | 13 |
| | 2 33 | 0 06 W | 0 19 | 19½ |
| | 3 01 | 0 13 E | 0 26 | 14 |
| | 5 01 | 0 11 W | 0 26 | 17 |
| | 6 03 | 0 14 E | 0 26 | 21½ |
| | 7 01 | 0 59 | 0 27 | 26½ |
| | 9 06 | 0 37 | 0 36 | 27 |
| | 9 58 | 0 56 | 0 41 | 27½ |
| | 11 0 | 1 13 | 0 55 | 27½ |
| | 12 01 | 0 42 | 0 39 | 27½ |
| 3d | A. M. | | | |
| | 1 3 | 0 27 | 0 57 | 27½ |
| | 1 33 | 0 44 | 0 56 | 27½ |
| | 2 2 | 0 16 | 0 50 | 28 |
| | 2 31 | 0 11 | 0 39 | 29 |
| | 3 06 | 0 33 | 0 24 | 28 |
| | 5 6 | 0 51 | 0 19 W | 29 |
| | 6 5 | 0 18 W | 0 42 | 26 |
| | 7 01 | 0 18 | 0 42 | 24½ |
| | 9 59 | 2 43 | 2 03 | 11½ |
| | 10 31 | 2 08 | 1 46 | 11½ |
| | 10 59 | 1 16 | 1 10 | 11½ |
| | 11 30 | 0 25 | 0 48 | 12 |
| | 11 58 | 0 30 | 0 50 | 10 |
| | P. M. | | | |
| | 0 33 | 0 10 E | 0 14 | 10½ |
| | 0 58 | 0 28 | 0 11 | 7 |
| | 1 55 | 0 44 | 0 01 E | 7 |
| | 3 04 | 0 44 | 0 23 W | 7½ |
| | 5 07 | 0 19 W | 0 11 | 10½ |
| | 6 01 | 0 19 | Zero. | |
| | 7 00 | 0 09 E | 0 06 E | 19 |
| | 9 4 | 0 20 | 0 01 | 24 |
| | 10 1 | 0 34 | 0 14 | 24 |
| | 11 01 | 0 40 | 0 17 | 25 |
| | 12 2 | 0 21 | 0 03 | 25 |
| 4th | A. M. | | | |
| | 1 4 | 0 21 | 0 12 | 26½ |
| | 2 01 | 0 21 | 0 12 | 27 |
| | 3 3 | 0 21 | 0 12 | 27 |
| | 5 6 | 0 30 | 0 21 | 27 |
| | 6 0 | 0 30 | 0 16 | 25½ |
| | 7 0 | 0 12 W | 0 32 W | 22 |
| | 9 0 | 1 19 | 1 11 | 4½ |
| | 9 56 | 1 02 | 1 00 | 1 |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | — |
| 4th | h. m. | ° ′ | ° ′ | ° |
| | 10 28 | 1 10 W | 1 08 W | 1½ |
| | 11 3 | 1 29 | 1 46 | 3 |
| | 11 29 | 1 15 | 1 08 | 0½ |
| | 12 01 | 1 30 | 1 20 | 2½ |
| | P. M. | | | |
| | 1 0 | 0 38 E | 0 36 E | 3 |
| | 1 30 | 0 06 | 0 57 | 4 |
| | 2 0 | 1 40 | 1 28 | 6 |
| | 2 32 | 1 30 | 1 19 | 1½ |
| | 2 59 | 1 22 | 1 19 | 1 |
| | 3 29 | 1 00 W | 0 08 W | 0½ |
| | 3 57 | 0 23 E | 0 46 E | 0½ |
| | 5 01 | 0 08 | 0 22 | 2 |
| | 6 01 | 0 36 | 0 46 | 11 |
| | 7 3 | 0 06 | 0 36 | 19 |
| | 9 1 | 0 35 | 0 46 | 24 |
| | 10 1 | 1 17 | 1 05 | 27 |
| | 10 16 | 0 47 | 0 57 | 28 |
| | 10 56 | 0 18 | 0 06 | 28 |
| | 11 14 | 0 25 | 0 07 | 28 |
| | 11 56 | 0 25 | 0 23 | 29 |
| 5th | A. M. | | | |
| | 0 58 | 0 12 | 0 21 | 29½ |
| | 2 01 | 0 06 | 0 16 | 30½ |
| | 2 58 | 0 03 | 0 17 | 31½ |
| | 5 5 | 0 03 | 0 17 | 31½ |
| | 5 59 | 0 03 | 0 17 | 31 |
| | 7 01 | 0 03 | 0 17 | 17 |
| | 9 33 | 0 52 W | 0 40 W | 4 |
| | 10 0 | 0 52 | 0 32 | 4½ |
| | 10 31 | 0 09 | 0 33 | 2½ |
| | 11 0 | 0 33 | 0 21 | 1½ |
| | 11 30 | 0 45 | 0 19 | 1½ |
| | 12 01 | 0 39 | 0 19 | Zero |
| | P. M. | | | |
| | 0 56 | 0 01 | 0 14 | Zero |
| | 1 13 | 0 21 E | 0 06 E | 1½ |
| | 1 51 | 0 28 | 0 43 | 1½ |
| | 2 16 | 0 16 | 0 41 | 2 |
| | 2 42 | 1 04 W | 0 13 W | 2 |
| | 3 01 | 0 38 | 0 12 | 2½ |
| | 3 11 | 0 18 E | 0 18 E | 3 |
| | 3 14 | . . . . . | 0 22 | 1½ |
| | 3 31 | 0 17 | 0 22 | 1 |
| | 3 51 | 0 10 W | 0 10 | 1 |
| | 5 01 | 0 33 E | 0 10 | 7 |
| | 6 01 | 0 33 | 0 47 | 13 |
| | 7 00 | 0 33 | 0 13 | 20 |
| | 9 30 | Zero. | 0 27 | 28½ |
| | 10 3 | 0 16 | 0 21 | 29½ |
| | 10 34 | 0 35 | 0 36 | 30 |
| | 11 0 | 0 31 | 0 47 | 30½ |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 5th | h. m. | ° ′ | ° ′ | ° |
| | 11 31 | 0 44 E | 1 00 E | 30½ |
| | 12 01 | 1 30 | 1 48 | 30½ |
| 6th | A. M. | | | |
| | 1 1 | 1 07 | 1 17 | 32 |
| | 1 52 | 0 46 | 1 13 | 32 |
| | 2 05 | 0 37 | 0 41 | 32 |
| | 3 01 | 0 28 | 0 32 | 33 |
| | 3 55 | 0 01 W | 0 23 | 33 |
| | 5 01 | 1 01 E | 0 58 | 32½ |
| | 5 57 | 0 07 | 0 37 | 30½ |
| | 7 0 | 0 21 | 0 18 | 22½ |
| | 7 55 | Zero. | 0 02 | 16½ |
| | 9 3 | 0 17 W | 0 23 W | 12 |
| | 10 01 | 1 30 | 1 28 | 9 |
| | 11 01 | 0 52 | 1 14 | 7½ |
| | 12 0 | 0 25 | 0 31 | 4½ |
| | P. M. | | | |
| | 1 0 | 0 32 E | 0 09 E | Zero |
| | 1 29 | 0 51 | 0 49 | 5½ |
| | 2 0 | 1 08 | 1 08 | 8 |
| | 3 0 | 1 08 | 1 11 | 8 |
| | 5 0 | 0 46 | 0 37 | 8 |
| | 6 4 | 0 01 | 0 12 | 14 |
| | 7 03 | 0 01 | 0 12 | 22 |
| | 9 7 | 0 01 | 0 20 | 28 |
| | 10 5 | 0 01 | 0 12 W | 29 |
| | 11 1 | 0 01 | 0 06 E | 29 |
| | 12 1 | 0 01 | 0 06 | 30 |
| 7th | A. M. | | | |
| | 1 4 | 0 06 | 0 31 | 30 |
| | 1 31 | 0 06 | 0 21 | 30 |
| | 2 00 | 0 06 | 0 21 | 30 |
| | 2 26 | 0 11 | 0 27 | 30½ |
| | 3 4 | 0 07 | 0 23 | 30½ |
| | 5 01 | 0 40 | 0 31 | 30½ |
| | 6 01 | 0 58 | 0 37 | 29½ |
| | 7 01 | 0 04 W | 0 03 | 20 |
| | 7 53 | 0 04 | 0 19 | 15 |
| | 8 58 | 0 09 | 0 14 | 10½ |
| | 9 56 | 1 01 | 0 09 | 5½ |
| | 10 31 | 1 04 | 0 01 | 5½ |
| | 10 59 | 1 10 | 0 09 W | 5 |
| | 11 28 | 1 41 | 0 14 | 3½ |
| | 12 01 | 2 18 | 0 58 | 2½ |
| | P. M. | | | |
| | 1 10 | 1 34 | 1 06 | 5 |
| | 2 01 | 2 07 | 1 36 | 3½ |
| | 3 01 | 0 31 | 0 36 | 1 |
| | 5 01 | 0 29 E | 0 18 E | 5 |
| | 5 33 | 0 06 W | 1 59 | 8½ |
| | 6 6 | 0 21 E | 0 36 | 12 |
| | 6 33 | 0 01 W | 0 36 | 14½ |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | — |
| 7th | h. m. | ° ′ | ° ′ | ° |
| | 7 06 | 0 04 W | 0 04 W | 17 |
| | 7 33 | 0 21 E | 0 27 E | 22 |
| | 8 58 | 0 16 W | 0 21 | 25½ |
| | 9 56 | 0 11 | 0 27 | 26 |
| | 11 2 | 0 16 | 0 19 | 26 |
| | 12 4 | 1 17 E | 1 20 | 27½ |
| 8th | A. M. | | | |
| | 1 4 | 1 54 | 1 40 | 28 |
| | 2 4 | 1 54 | 1 40 | 27½ |
| | 3 3 | 0 38 | 1 08 | 27½ |
| | 5 4 | 0 25 | 0 29 | 25½ |
| | 6 0 | 1 01 | 0 36 | 21 |
| | 7 0 | 0 38 | 0 26 | 16½ |
| | 9 26 | 0 31 W | 0 21 W | 11 |
| | 10 7 | 0 46 | 0 26 | 8½ |
| | 10 12 | ..... | 0 34 | 8 |
| | 10 31 | 0 41 | 0 24 | 7½ |
| | 11 8 | 1 26 | 1 11 | 7½ |
| | 11 33 | 0 45 | 0 34 | 7½ |
| | 12 03 | 0 48 E | 2 12 | 8 |
| | P. M. | | | |
| | 1 0 | 1 11 | 2 21 | 6 |
| | 1 56 | 1 52 | 2 01 | 8 |
| | 3 01 | 2 37 W | 1 46 | 9 |
| | 5 12 | 0 29 | 0 54 | 10 |
| | 5 59 | 0 29 | 0 34 | 12½ |
| | 7 4 | 1 00 E | 0 23 E | 15 |
| | 9 33 | 2 03 | 1 59 | 23 |
| | 10 1 | 1 53 | 2 16 | 23 |
| | 10 33 | 1 46 | 1 19 | 23½ |
| | 11 11 | 3 47 | 2 18 | 23½ |
| | 12 1 | 3 21 | 1 58 | 24 |
| 9th | A. M. | | | |
| | 1 8 | 2 19 | 1 47 | 24 |
| | 2 2 | 1 27 | 1 17 | 24 |
| | 5 4 | 0 02 | 0 09 | 25 |
| | 6 03 | 0 14 W | 0 08 W | 21½ |
| | 7 01 | 0 29 | 0 27 | 16 |
| | 9 30 | 0 43 | 0 40 | 10 |
| | 10 1 | 0 20 | 0 23 | 10½ |
| | 10 31 | 1 34 | 1 24 | 7½ |
| | 11 0 | 2 20 | 1 44 | 9 |
| | 11 30 | 3 38 | 2 50 | 9½ |
| | 12 0 | 3 10 | 2 42 | 10 |
| | P. M. | | | |
| | 1 1 | 3 16 | 2 54 | 8½ |
| | 1 32 | 2 00 | 2 06 | 8 |
| | 2 06 | 0 36 | 1 14 | 8 |
| | 2 33 | 2 25 | 2 03 | 9½ |
| | 3 06 | 1 34 | 1 34 | 11 |
| | 3 51 | 1 53 | 1 41 | 13½ |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | ∓ |
| 9th | h. m. | ° ′ | ° ′ | ° |
| | 5 03 | 0 02 W | 0 49 W | —14 |
| | 6 01 | 0 02 | 0 49 | —16½ |
| | 7 01 | 0 23 E | 0 29 | —18 |
| | 9 31 | 0 23 | 0 21 | —20½ |
| | 10 01 | 0 41 | 0 04 | —20½ |
| | 10 30 | 0 14 | 0 09 | —20½ |
| | 11 03 | 0 23 | 0 20 E | —20½ |
| | 11 31 | 0 52 | 0 41 | —20½ |
| | 12 01 | 1 01 | 1 01 | —20 |
| 10th | A. M. | | | |
| | 1 8 | 3 48 | 2 08 | —20 |
| | 1 56 | 3 06 | 2 28 | —20 |
| | 2 11 | 3 26 | 2 39 | —19½ |
| | 2 56 | 4 11 | 3 04 | —18 |
| | 3 51 | 1 43 | 1 33 | —18 |
| | 5 3 | 0 34 | 0 56 | —18 |
| | 6 01 | 0 18 | 0 44 | —17 |
| | 7 04 | 0 01 | 1 02 | —16 |
| | 9 03 | 1 13 W | 0 07 W | —10½ |
| | 10 01 | 1 30 | 0 14 | —10½ |
| | 11 1 | 1 00 | 0 05 | —10 |
| | 12 4 | 0 19 | 0 23 | — 9 |
| | P. M. | | | |
| | 0 52 | 0 17 E | Zero | — 7½ |
| | 1 29 | 0 07 W | 0 12 | — 8½ |
| | 2 01 | 1 22 | 0 51 | — 8½ |
| | 2 31 | 0 04 | 0 14 | — 8 |
| | 3 3 | 1 06 | 0 43 | — 7½ |
| | 3 30 | 0 59 | 0 32 | — 7½ |
| | 5 01 | 0 28 E | 0 41 E | — 9 |
| | 6 03 | 0 01 | 0 21 | — 9 |
| | 7 6 | 0 27 | 0 38 | — 9 |
| 11th | A. M. | | | |
| | 9 01 | 1 10 W | 0 17 W | — 5 |
| | 9 54 | 1 18 | 0 34 | — 2½ |
| | 10 59 | 0 43 | 0 05 | — 1 |
| | 11 30 | 3 03 | | |
| | 12 3 | Zero | 2 00 | + 0½ |
| | P. M. | | | |
| | 0 24 | 2 35 | 1 49 | + 0½ |
| | 1 01 | 4 22 | 3 22 | + 2 |
| | 1 32 | 4 18 | 3 09 | + 2 |
| | 2 3 | 4 14 | 2 44 | + 3 |
| | 3 01 | 2 40 | 2 39 | + 3 |
| | 5 06 | 0 04 | 1 14 | + 7 |
| | 6 02 | 0 18 E | 0 36 | + 5 |
| | 7 03 | 0 03 | 0 31 | + 4 |
| | 7 30 | 0 03 | ..... | + 4 |
| | 8 58 | 0 41 | 0 10 | + 2 |
| | 9 31 | 1 28 | 0 19 E | + 2 |
| | 9 58 | 0 35 | 0 06 | + 2 |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | ∓ |
| 11th | h. m. | ° ′ | ° ′ | ° |
| | 11 1 | 1 17 E | 0 11 E | + 2 |
| | 12 1 | 2 07 | 0 41 | + 2½ |
| 12th | A. M. | | | |
| | 1 03 | 1 27 | 0 31 | + 2½ |
| | 2 2 | 1 01 | 0 23 | + 2½ |
| | 3 1 | 1 22 | 0 40 | + 2 |
| | 5 6 | 0 01 | 0 32 | + 7½ |
| | 6 0 | 0 17 | 0 32 | + 8 |
| | 7 0 | 0 02 | 0 20 | + 9 |
| | 9 34 | 0 46 W | 0 09 W | +12½ |
| | 10 12 | 0 57 | 0 31 | +13½ |
| | 10 34 | 1 10 | 0 36 | +13½ |
| | 11 2 | 1 29 | 0 41 | +13½ |
| | 11 32 | 1 59 | 1 09 | +13½ |
| | 12 01 | 0 14 | 1 09 | +13½ |
| | P. M. | | | |
| | 1 6 | 2 06 | 1 20 | +13½ |
| | 1 54 | 1 53 | 1 16 | +13 |
| | 2 58 | 1 16 | 0 54 | +13 |
| | 5 01 | 0 21 | 0 11 | + 9 |
| | 6 01 | 0 02 | 0 04 | + 9 |
| | 7 0 | 0 21 E | 0 09 E | + 7 |
| | 9 46 | 0 51 | 0 26 | + 6 |
| | 10 01 | 1 13 | 0 38 | + 5 |
| | 11 03 | 0 31 | 0 23 | + 4 |
| | 11 51 | 0 31 | 0 21 | + 3 |
| 13th | A. M. | | | |
| | 1 01 | 0 57 | 0 36 | + 1½ |
| | 1 57 | 1 05 | 0 42 | — 1½ |
| | 2 58 | 1 01 | 0 41 | — 3½ |
| | 3 59 | 0 57 | 0 36 | — 5½ |
| | 5 03 | 0 57 | 0 36 | — 5 |
| | 6 02 | 1 14 | 0 49 | — 3 |
| | 7 05 | 0 03 | 0 26 | + 2 |
| | 9 29 | 1 10 W | 0 31 W | + 1½ |
| | 9 57 | 1 21 | 0 49 | + 2 |
| | 10 30 | 2 20 | 0 58 | + 1 |
| | 11 1 | 1 45 | 0 53 | + 1 |
| | 11 30 | 1 45 | 0 53 | + 2 |
| | 12 1 | 1 50 | 0 59 | + 4½ |
| | P. M. | | | |
| | 0 58 | 1 23 | 1 02 | + 5½ |
| | 1 31 | 2 01 | 1 11 | + 3½ |
| | 2 01 | 1 55 | 1 11 | Zero |
| | 3 01 | 1 46 | 1 11 | — 0½ |
| | 5 5 | 0 46 | 1 36 E | — 5 |
| | 6 01 | 0 18 | 0 02 W | — 6½ |
| | 7 03 | 0 18 | 0 02 | — 8 |
| | 9 33 | 0 34 E | 0 29 E | —10½ |
| | 10 01 | 0 08 | 0 22 | —11 |
| | 10 30 | 0 08 | 0 22 | —11 |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 1. | Temp. | April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 1. | Needle No. 2. | Temp. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | P. M. | | | ∓ | 1825. | P. M. | | | ∓ |
| 13th | h. m. | ° ′ | ° ′ | ° | 15th | h. m. | ° ′ | ° ′ | ° |
| | 11 01 | 0 08 E | 0 18 E | —11 | | 3 0 | 1 11 E | 0 36 E | + 1 |
| | 11 31 | 0 30 | 0 18 | —11 | | 5 9 | 0 34 W | 0 11 | — 4 |
| | 12 04 | 0 30 | 0 18 | —12 | | 5 56 | 0 56 | 0 01 W | — 4 |
| 14th | | | | | | 6 56 | 0 12 | 0 01 | — 5½ |
| | 1 7 | 0 50 | 0 27 | —12½ | | 9 01 | 0 05 | 0 16 | — 8 |
| | 1 31 | 0 50 | 0 26 | —13 | | 10 11 | 0 17 E | 0 09 E | — 9½ |
| | 2 01 | 0 50 | 0 26 | —13 | | 11 01 | 0 06 | 0 04 W | —11 |
| | 3 06 | 0 41 | 0 51 | —13½ | | 12 04 | 0 14 | 0 09 | —13 |
| | 4 56 | 0 04 W | 0 43 | —12 | 16th | A. M. | | | |
| | 5 56 | 0 04 E | 0 31 | — 9½ | | 1 05 | 0 14 | 0 04 W | —13½ |
| | 6 57 | 0 02 W | 0 22 | — 4 | | 1 31 | 0 07 | 0 25 E | —14½ |
| | 9 01 | 0 19 | Zero | — 9 | | 2 01 | 0 10 W | 1 17 W | —15 |
| | 9 59 | 0 45 | 0 20 W | — 8½ | | 2 31 | 0 39 | 1 17 | —15 |
| | 10 31 | 0 45 | 0 20 | — 8½ | | 3 05 | 0 37 E | 0 16 E | —15½ |
| | 11 00 | 0 45 | 0 32 | — 7½ | | 5 5 | 0 21 W | 0 49 W | —12 |
| | 11 32 | 1 15 | ..... | — 5½ | | 6 00 | 1 17 E | 0 09 E | — 6½ |
| | 12 0 | 1 04 | 0 32 | — 1 | | 7 00 | 1 26 W | 1 00 W | — 3 |
| | P. M. | | | | | 9 31 | 0 33 | 1 00 | +13½ |
| | 0 5 | ..... | 0 49 | — 5½ | | 10 6 | 0 36 | 1 00 | +14½ |
| | 0 30 | ..... | 2 34 | — 4 | | 10 31 | 1 17 | 1 00 | +14½ |
| | 0 43 | 1 55 E | 1 49 | — 3 | | 11 3 | 0 27 | 0 38 | +14½ |
| | 1 4 | 1 11 W | 0 54 | — 3½ | | 11 34 | 0 26 | 0 38 | +15 |
| | 1 32 | 3 44 | 1 41 | — 1½ | | 12 01 | 0 31 | 0 38 | +15 |
| | 2 1 | 3 43 | 1 44 | Zero | | P. M. | | | |
| | 2 29 | 2 30 | 1 41 | Zero | | 1 01 | 0 04 E | 0 18 | +22½ |
| | 3 0 | 2 34 | 1 39 | + 1 | | 1 58 | 1 22 | 0 21 E | +23½ |
| | 3 52 | 2 12 | 1 01 | — 1 | | 2 27 | 2 04 | 1 36 | +24½ |
| | 5 02 | 0 21 | 0 28 | + 0½ | | 5 11 | 0 30 W | 0 06 | +16½ |
| | 6 01 | 0 45 | 0 40 | — 0½ | | 6 0 | 0 30 | 0 04 | +13 |
| | 7 02 | 1 10 E | 0 18 E | — 1 | | 7 0 | 0 26 E | 0 38 | + 8 |
| | 9 01 | 2 23 | 1 08 | —11 | | 9 26 | 0 28 | 0 38 | +0½ |
| | 10 3 | 3 46 | 1 56 | —12½ | | 10 7 | 0 28 | 1 03 | —6 |
| | 11 1 | 3 46 | 2 0 | —13 | | 10 34 | 0 41 | 1 08 | —6 |
| | 12 01 | 3 46 | 2 0 | —13½ | | 11 6 | 1 46 | 1 47 | —6½ |
| 15th | A. M. | | | | | 11 54 | 1 04 | 1 28 | —7 |
| | 1 1 | 2 43 | 1 41 | —14 | 17th | A. M. | | | |
| | 1 33 | 1 51 | 1 22 | —14 | | 0 58 | 0 36 | 1 19 | —6 |
| | 2 00 | 1 17 | 1 02 | —14 | | 2 0 | 0 21 | 0 57 | —7½ |
| | 2 33 | 1 31 | 1 01 | —14½ | | 3 01 | 0 15 | 0 49 | —9 |
| | 3 00 | 2 04 | 1 12 | —14½ | | 5 08 | 0 01 | 0 39 | —8½ |
| | 5 5 | 0 31 | 0 29 | —14 | | 6 02 | 0 01 | 0 38 | —0½ |
| | 5 57 | 0 31 | 0 29 | —14 | | 7 10 | 0 03 W | 0 24 | +8 |
| | 6 56 | 0 34 W | 0 04 W | — 8½ | | 9 32 | 0 49 | Zero | +22½ |
| | 9 04 | 0 56 | 0 19 | — 6 | | 10 0 | 2 22 | 0 52 | +23½ |
| | 10 2 | 1 12 | 0 32 | — 2½ | | 10 31 | 1 40 | 0 34 | +22 |
| | 10 59 | 1 49 | 0 45 | + 3 | | 11 1 | 2 23 | 0 54 | +21½ |
| | 11 56 | 1 16 | 0 38 | — 2½ | | 11 31 | 2 30 | 1 12 | +23 |
| | P. M. | | | | | 12 01 | 3 01 | 1 16 | +28 |
| | 1 03 | 0 05 E | 0 01 E | — 7 | | P. M. | | | |
| | 1 31 | 0 49 | 0 14 | — 7 | | 0 57 | 2 29 | 0 52 | +26½ |
| | 2 3 | 1 50 | 0 32 | — 8 | | 1 33 | 1 06 E | 1 18 | +24½ |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | ∓ |
| 17th | h. m. | ° ′ | ° ′ | ° |
| | 2 06 | 0 06 E | 1 03 E | +22½ |
| | 5 01 | 0 34 W | 1 00 | +17½ |
| | 6 01 | 0 03 E | 1 01 | +14 |
| | 7 03 | 0 03 | 1 01 | + 2 |
| | 9 30 | 0 01 | 1 18 | — 6 |
| | 10 01 | 0 31 | 1 39 | — 7 |
| | 10 33 | 0 37 | 1 39 | — 7 |
| | 11 5 | 1 00 | 1 56 | — 7½ |
| | 11 33 | 1 10 | 2 01 | — 8 |
| | 12 5 | 2 25 | 3 01 | — 8 |
| 18th | A. M. | | | |
| | 1 4 | 0 53 | 2 11 | — 8 |
| | 1 31 | 0 28 | 0 03 | — 8½ |
| | 2 03 | 0 03 | 0 02 W | — 9½ |
| | 5 02 | 0 08 | 1 56 E | — 7 |
| | 5 28 | 0 02 | 1 49 | — 6 |
| | 5 59 | 0 29 W | 0 11 W | — 2 |
| | 7 6 | 1 05 | 0 55 E | + 5 |
| | 8 01 | 0 49 | 0 54 | +10½ |
| | 9 02 | 0 42 | 1 06 | +13½ |
| | 9 31 | 0 57 | 0 47 | +16 |
| | 10 04 | 0 47 | 0 59 | +18 |
| | 10 31 | 1 49 | 0 23 | + 9 |
| | 11 01 | 1 34 | 0 39 | + 8½ |
| | 12 06 | 0 56 | 0 39 | +13½ |
| | P. M. | | | |
| | 0 49 | 0 01 | 1 12 | +20½ |
| | 1 0 | ..... | 1 39 | +21½ |
| | 1 30 | 0 19 E | | |
| | 1 59 | 1 07 | 2 16 | +20½ |
| | 2 31 | 1 33 | 2 28 | +18 |
| | 4 58 | 0 56 | 2 06 | +13 |
| | 6 01 | 0 43 | 1 42 | + 9½ |
| | 7 01 | 0 33 | 1 42 | + 4½ |
| | 9 3 | 0 33 | 1 32 | — 6½ |
| | 10 2 | 0 11 | 1 32 | — 8 |
| | 11 3 | 0 11 | 1 32 | — 8 |
| | 12 3 | 0 06 | 1 32 | — 8½ |
| 19th | A. M. | | | |
| | 0 59 | 0 02 | 1 22 | — 9½ |
| | 1 32 | 0 10 W | 1 20 | — 9½ |
| | 2 01 | 0 11 | 1 16 | — 9½ |
| | 2 30 | 0 11 | 1 11 | — 9½ |
| | 3 2 | 0 10 | 1 11 | — 9½ |
| | 5 01 | 0 05 E | 0 58 | — 7 |
| | 5 57 | 0 09 W | 0 46 | — 2½ |
| | 7 01 | 0 28 E | 1 10 | + 1 |
| | 9 16 | 0 11 W | 0 45 | + 6½ |
| | 9 58 | 0 42 | 0 26 | + 9 |
| | 11 2 | 0 09 E | 1 01 | + 9½ |
| | 11 31 | 0 16 | 1 07 | +10 |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | ∓ |
| 19th | h. m. | ° ′ | ° ′ | ° |
| | 12 3 | 0 02 E | 0 47 E | +11 |
| | P. M. | | | |
| | 1 2 | 0 13 W | 0 47 | +10 |
| | 1 31 | 1 04 | 0 01 W | +10 |
| | 2 04 | 0 19 | 0 12 E | +10½ |
| | 3 0 | 0 09 | 0 26 | +10½ |
| | 5 5 | 0 01 | 0 34 | + 7½ |
| | 6 0 | 0 11 | 0 34 | + 4½ |
| | 7 01 | 0 11 E | 0 56 | + 3 |
| | 9 04 | 0 07 | 1 02 | — 3½ |
| | 9 58 | 0 07 | 0 50 | — 3½ |
| | 10 59 | 0 26 | 1 17 | — 3 |
| | 12 4 | 0 26 | 1 18 | — 3 |
| 20th | A. M. | | | |
| | 1 05 | 0 42 | 1 18 | — 3 |
| | 1 31 | 0 57 | 1 29 | — 3 |
| | 2 03 | 1 05 | 1 50 | — 3½ |
| | 3 01 | 0 42 | 1 36 | — 3½ |
| | 5 4 | 0 18 W | 0 41 | + 0½ |
| | 6 0 | 0 17 E | 1 09 | + 1½ |
| | 7 0 | 0 08 | 1 01 | + 3½ |
| | 9 22 | 0 52 W | 0 06 | + 6 |
| | 10 6 | 0 51 | 0 06 | + 8 |
| | 10 30 | 1 06 | 0 07 | + 9 |
| | 10 58 | 0 59 | 0 07 | + 9 |
| | 11 30 | 0 40 | 0 16 | +12 |
| | 11 51 | 1 19 | 0 02 W | +12 |
| | 12 9 | 0 50 | 0 02 | +13½ |
| | P. M. | | | |
| | 0 57 | 0 50 E | 1 18 E | +13½ |
| | 2 4 | 1 07 | 1 22 | +10½ |
| | 3 01 | 0 27 | 0 48 | +11 |
| | 3 55 | 0 04 W | 0 51 | +11½ |
| | 5 0 | 0 01 | 1 06 | +12½ |
| | 6 01 | 01 43 | 1 36 | +10½ |
| | 7 04 | 2 9 | 1 21 | + 7 |
| | 9 00 | 1 03 | ..... | + 6 |
| | 9 20 | ..... | 1 58 | + 5 |
| | 9 32 | 1 53 | 2 11 | + 6 |
| | 10 01 | 1 53 | 2 11 | + 6 |
| | 10 36 | 1 36 | 2 11 | + 6 |
| | 11 0 | ..... | 1 57 | + 5 |
| | 11 53 | 0 58 | 1 41 | + 6 |
| 21st | A. M. | | | |
| | 0 59 | 0 39 | 1 29 | + 5½ |
| | 2 01 | 0 06 | 1 17 | + 5½ |
| | 2 26 | 0 07 W | 0 38 | + 4½ |
| | 5 05 | 0 07 | 0 38 | + 6 |
| | 5 30 | 0 06 E | 0 38 | + 6 |
| | 6 3 | 0 06 | 0 38 | + 7 |
| | 7 2 | 0 06 | 0 46 | + 7½ |

| pril. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No.1. | Needle No.2. | |
| 1825. | A. M. | | | ∓ |
| 21st. | h. m. | ° ′ | ° ′ | ° |
| | 9 30 | 1 33 W | 0 04 W | +12 |
| | 10 4 | 1 16 | 0 02 E | +12½ |
| | 10 29 | 1 24 | 0 03 W | +12½ |
| | 11 5 | 2 01 | 0 37 | +14½ |
| | 11 30 | 1 56 | 0 37 | +15 |
| | 12 5 | 2 46 | 0 48 | +16½ |
| | P. M. | | | |
| | 0 50 | 1 53 | ..... | +22 |
| | 1 12 | 2 03 | 0 46 | +21 |
| | 1 29 | 1 21 | 0 02 | +20½ |
| | 2 09 | 1 30 | 0 08 | +19½ |
| | 2 36 | 0 48 E | 1 29 | +19 |
| | 3 11 | 1 52 W | 0 16 | +17½ |
| | 3 32 | 0 14 | 0 31 E | +14 |
| | 5 06 | 0 33 E | 1 15 | +12½ |
| | 6 04 | 0 29 W | 0 49 | +10 |
| | 7 04 | 0 33 E | 1 18 | + 9 |
| | 9 31 | 0 05 | 1 18 | + 4 |
| | 9 58 | 0 05 | 1 18 | + 3 |
| | 10 31 | 0 28 | 1 32 | + 3 |
| | 11 0 | 0 20 | 1 32 | + 3½ |
| | 11 31 | 0 18 | 1 31 | + 2½ |
| | 12 6 | 0 24 | 1 31 | + 2 |
| 22d | A. M. | | | |
| | 1 10 | 0 38 | 1 36 | Zero |
| | 2 01 | 0 38 | 1 36 | — 1 |
| | 2 56 | 0 45 | 1 40 | — 1 |
| | 3 48 | 0 17 | 1 31 | — 2 |
| | 4 58 | 0 42 | 1 42 | — 2½ |
| | 6 01 | 0 24 | 1 25 | + 2 |
| | 7 03 | 0 16 | 1 21 | + 7 |
| | 7 31 | 0 06 | 1 10 | + 7½ |
| | 8 59 | 0 10 W | 0 55 | +16 |
| | 9 34 | 0 51 | 0 23 | +18½ |
| | 10 01 | 1 31 | 0 12 | +21½ |
| | 10 31 | 1 52 | 0 18 | +22 |
| | 11 0 | 2 01 | 0 28 | +25½ |
| | 11 30 | 2 54 | 1 17 | +17 |
| | 12 0 | 3 15 | 1 20 | +19½ |
| | P. M. | | | |
| | 0 41 | 3 11 | 1 23 | +25 |
| | 1 0 | 2 40 | 1 07 | +24 |
| | 1 29 | 1 55 | 0 31 | +21½ |
| | 2 01 | 0 01 E | 0 58 | +22 |
| | 3 0 | 1 46 | 1 40 | +27 |
| | 5 1 | 0 52 | 1 16 | +22 |
| | 6 19 | 0 16 | 1 01 | +19½ |
| | 7 01 | 0 16 | 0 59 | +15½ |
| | 9 04 | 0 28 | 1 11 | + 2½ |
| | 10 5 | 0 28 | 1 24 | + 1 |
| | 11 5 | 0 15 | 1 11 | — 0½ |

| April. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No.1. | Needle No.2. | |
| 1825. | A. M. | | | ∓ |
| | h. m. | ° ′ | ° ′ | ° |
| 22d | 12 4 | 0 14 E | 1 09 E | + 2½ |
| 23d | 0 59 | 0 06 W | 1 09 | + 2 |
| | 1 31 | 0 01 | 1 06 | + 2 |
| | 2 03 | 0 01 | 1 02 | + 2½ |
| | 2 31 | 0 06 E | 1 06 | + 3½ |
| | 3 04 | 0 03 W | 1 06 | + 2½ |
| | 4 57 | 0 34 E | 1 15 | + 3 |
| | 6 01 | 0 18 | 0 53 | + 7 |
| | 7 12 | 0 24 W | 0 38 | +10½ |
| | 9 01 | 0 31 | 0 29 | +11 |
| | 10 04 | 1 32 | 0 06 | +13½ |
| | 10 31 | 1 40 | 0 02 | +12½ |
| | 11 01 | 0 19 | 0 41 | +12 |
| | 11 32 | 0 27 | 0 42 | +12 |
| | 12 01 | 0 42 | 0 37 | +13 |
| | P. M. | | | |
| | 1 13 | 2 15 | 0 49 W | + 9 |
| | 2 4 | 2 15 | 0 50 | + 9½ |
| | 2 35 | 1 20 | 0 28 | +12½ |
| | 3 02 | 0 51 | 0 12 E | +16 |
| | 5 11 | 0 01 | 0 06 W | +15½ |
| | 5 57 | 0 48 | 0 04 | +11 |
| | 7 00 | 0 20 | 0 41 E | + 7½ |
| | 9 01 | 1 40 E | 2 04 | + 5½ |
| | 10 01 | 0 59 | 1 34 | + 5½ |
| | 11 02 | 0 49 | 1 26 | + 5½ |
| | 12 03 | 0 30 | 1 18 | + 5½ |
| 24th | A. M. | | | |
| | 1 5 | 0 17 | 1 58 | + 4½ |
| | 1 33 | 0 17 | 1 49 | + 4½ |
| | 2 03 | 0 17 | 1 49 | + 4½ |
| | 2 34 | 0 17 | 1 49 | + 4 |
| | 3 04 | 0 17 | | |
| | 5 7 | 0 22 | 1 39 | + 2½ |
| | 6 0 | 0 17 W | 1 09 | + 2 |
| | 7 4 | 0 39 | 0 56 | + 2 |
| | 8 55 | 1 04 | ..... | + 5 |
| | 9 29 | 1 24 | 0 13 | + 5½ |
| | 9 46 | 0 53 | 0 21 | + 5½ |
| | 10 6 | 0 53 | 0 21 | + 6½ |
| | 10 31 | 0 53 | 0 21 | + 7½ |
| | 11 01 | 0 29 | 0 33 | + 7½ |
| | 11 31 | 0 37 | 0 26 | + 8 |
| | 12 01 | 0 05 | 0 49 | + 8 |
| | P. M. | | | |
| | 0 36 | 0 08 E | 0 56 | + 9 |
| | 1 12 | 0 33 | 1 19 | + 8 |
| | 2 02 | 0 21 | 1 17 | + 7 |
| | 5 06 | 0 10 W | 1 10 | + 3 |
| | 6 00 | 0 33 | 0 42 | + 3½ |
| | 7 01 | 0 02 E | 1 01 | + 2½ |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | ∓ |
| 24th | h. m. | ° ′ | ° ′ | ° |
| | 8 53 | 0 03 E | | |
| | 9 20 | ..... | 1 14 E | + 2 |
| | 10 1 | 0 03 | 1 14 | + 0½ |
| | 10 36 | 0 03 | 1 06 | + 0½ |
| | 11 1 | 0 03 | 1 06 | + 1 |
| | 11 33 | 0 03 | 1 06 | + 0½ |
| | 11 53 | Zero | 1 03 | + 0½ |
| 25th | A. M. | | | |
| | 0 58 | 0 21 | 0 12 | + 0½ |
| | 2 03 | 0 37 | 1 18 | + 0½ |
| | 3 02 | 0 36 | 1 32 | + 0½ |
| | 4 06 | 0 17 | 1 22 | + 1 |
| | 5 4 | 0 17 | 1 22 | + 1½ |
| | 6 4 | 1 08 | 1 22 | + 1½ |
| | 7 6 | 1 08 | 1 22 | + 2 |
| | 9 41 | 0 30 W | 0 50 | +12½ |
| | 10 6 | 0 43 | 0 36 | +14 |
| | 10 30 | 1 34 | 0 07 | +13 |
| | 11 03 | 1 01 | 0 42 | +13½ |
| | 11 34 | 1 40 | 0 29 | +14 |
| | 12 1 | 1 49 | 0 29 W | +14½ |
| | P. M. | | | |
| | 0 53 | 1 58 | 0 34 | +20½ |
| | 1 29 | 1 49 | 0 24 | +19 |
| | 2 01 | 1 44 | 0 24 | +18½ |
| | 2 26 | 1 41 | 0 19 | +17½ |
| | 3 01 | 1 17 | 0 02 | +13½ |
| | 3 26 | 1 09 | 1 01 E | +13 |
| | 3 51 | 0 10 | 0 38 | +11½ |
| | 5 03 | 0 10 | 0 38 | +10 |
| | 6 02 | 0 19 E | 1 13 | + 6½ |
| | 7 02 | 0 44 | 1 32 | + 4½ |
| | 9 29 | 0 45 | 1 47 | + 3 |
| | 10 2 | 0 35 | 1 50 | + 3 |
| | 10 30 | 0 53 | 1 44 | + 2 |
| | 11 03 | 1 28 | 2 7 | + 1½ |
| | 11 32 | 2 03 | 2 18 | + 1½ |
| | 12 9 | 2 54 | 2 57 | + 2 |
| 26th | A. M. | | | |
| | 1 4 | 2 41 | 3 07 | + 1 |
| | 1 30 | 2 33 | 3 02 | Zero |
| | 2 01 | 2 33 | 2 32 | Zero |
| | 3 01 | 0 31 | 1 28 | Zero |
| | 4 01 | 0 11 | 1 06 | Zero |
| | 5 01 | 0 37 W | 0 51 | Zero |
| | 5 58 | 0 47 | 0 46 | Zero |
| | 7 02 | 0 09 E | 1 08 | Zero |
| | 8 3 | 1 36 W | 0 05 W | + 2 |
| | 9 04 | 2 09 | 0 32 | + 5 |
| | 10 5 | 2 09 | 0 47 | + 7 |
| | 10 36 | 1 19 | 0 01 E | +17 |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | ∓ |
| 26th | h. m. | ° ′ | ° ′ | ° |
| | 11 5 | 0 34 W | 0 07 E | +17 |
| | 11 34 | 0 34 | 0 33 | +18½ |
| | 12 1 | 1 09 E | 1 37 | +12½ |
| | P. M. | | | |
| | 0 53 | 1 02 W | 0 26 | + 8 |
| | 1 23 | 0 14 | 1 01 | + 8 |
| | 1 55 | 0 43 E | 1 46 | + 7 |
| | 2 33 | 0 06 | 0 48 | + 6½ |
| | 5 01 | 0 08 | 1 02 | + 7 |
| | 5 58 | 0 08 | 1 02 | + 8½ |
| | 6 59 | 0 06 W | 0 52 | + 3½ |
| | 7 59 | 0 04 E | 1 07 | + 1 |
| | 9 02 | 0 04 | 1 07 | — 1½ |
| | 10 03 | 0 24 | 1 19 | — 3 |
| | 11 3 | 0 24 | 1 19 | — 7 |
| | 12 1 | 0 04 | 1 19 | — 7½ |
| 27th | A. M. | | | |
| | 1 01 | 0 03 | 0 48 | — 7 |
| | 1 30 | 0 03 W | 1 11 | — 7 |
| | 2 01 | 0 03 | 1 11 | — 7 |
| | 2 31 | 0 02 E | 1 11 | — 7½ |
| | 5 7 | 0 23 | 1 14 | — 3 |
| | 6 01 | 0 05 W | 1 14 | — 2½ |
| | 7 01 | 0 01 | 1 14 | Zero |
| | 8 01 | 1 13 | 0 08 | + 5½ |
| | 8 55 | 0 51 | 0 23 | + 6½ |
| | 9 58 | 1 14 | 0 09 | + 9½ |
| | 10 58 | 1 18 | 0 04 | +14½ |
| | 12 2 | 1 05 | 0 09 | +14 |
| | P. M. | | | |
| | 1 06 | 0 09 E | 0 28 | +16½ |
| | 2 05 | 0 06 W | 1 01 | +13½ |
| | 2 31 | 0 05 E | 1 01 | +14 |
| | 3 02 | 0 05 | 1 07 | +15 |
| | 5 01 | 0 29 W | 0 39 | + 8½ |
| | 6 01 | 0 05 | 0 54 | + 7 |
| | 7 01 | 0 09 | 0 58 | + 5½ |
| | 9 03 | 0 46 E | 1 40 | + 2 |
| | 10 01 | 0 55 | 1 40 | + 1½ |
| | 11 4 | 1 20 | 1 56 | + 1 |
| | 12 01 | 2 01 | 2 19 | + 0½ |
| 28th | A. M. | | | |
| | 1 6 | 1 53 | 2 07 | Zero |
| | 2 04 | 1 01 | 1 26 | — 1 |
| | 3 01 | 0 29 | 1 27 | + 3 |
| | 5 0 | 0 38 | 1 36 | + 1½ |
| | 6 0 | 0 12 | 0 59 | + 4½ |
| | 7 3 | 0 03 | 0 49 | + 7 |
| | 9 25 | 1 01 W | 0 08 | +13 |
| | 10 1 | 1 01 | 0 08 | +15½ |
| | 10 31 | 1 14 | 0 03 | +17 |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | ∓ |
| 28th | h. m. | ° ′ | ° ′ | ° |
| | 11 1 | 1 39 W | 0 06 W | +18½ |
| | 11 29 | 1 25 | 0 01 | +18 |
| | 12 01 | 0 54 | 0 18 E | +23 |
| | P. M. | | | |
| | 0 59 | 0 35 | 0 24 | +23½ |
| | 2 4 | 0 59 E | 1 26 | +23 |
| | 5 0 | 0 03 | 1 20 | +10½ |
| | 6 0 | 0 11 W | 1 21 | + 8 |
| | 7 4 | 0 10 | 1 16 | + 5 |
| | 9 26 | 0 12 E | 1 26 | + 0½ |
| | 10 1 | 0 12 | 1 26 | — 1 |
| | 10 31 | 0 26 | 1 37 | — 3 |
| | 11 01 | 0 24 | 1 41 | — 3 |
| | 11 57 | 0 33 | 1 46 | — 3½ |
| 29th | A. M. | | | |
| | 0 58 | 0 18 | 1 38 | — 5 |
| | 2 0 | 0 18 | 1 38 | — 6 |
| | 3 4 | 0 18 | 1 38 | — 6½ |
| | 5 7 | 0 06 | 1 12 | — 2 |
| | 6 02 | 0 06 | 0 27 | — 0½ |
| | 6 59 | 0 04 W | 1 09 | + 5½ |
| | 9 29 | 0 40 | 0 49 | +19 |
| | 10 0 | 0 49 | 0 39 | +23 |
| | 10 29 | 0 20 | 0 46 | +25½ |
| | 11 0 | 0 49 | 0 34 | +28½ |
| | 11 31 | 0 14 | 1 01 | +29½ |
| | 12 0 | 0 19 | 0 48 | +29½ |
| | P. M. | | | |
| | 0 46 | 1 09 E | 0 31 | +31 |
| | 1 1 | 0 10 | 0 55 | +25½ |
| | 1 26 | 1 02 | 1 48 | +18 |
| | 2 13 | 2 21 | 2 35 | +21½ |
| | 2 34 | 1 26 | 2 35 | +19½ |
| | 3 19 | 1 08 | 2 16 | +11½ |
| | 5 5 | 0 38 | 1 34 | + 9 |
| | 6 7 | 0 38 | 1 34 | +6½ |
| | 7 2 | 0 38 | 1 34 | + 4 |
| | 9 28 | 0 28 | 1 39 | Zero |
| | 10 0 | 0 14 | 1 30 | — 1 |
| | 10 30 | 0 08 | 1 36 | — 1 |
| | 11 1 | 0 06 | 1 28 | — 2 |
| | 11 29 | 0 18 | 2 07 | — 2 |
| | 12 2 | 0 41 | 2 16 | — 2 |
| 30th | A. M. | | | |
| | 1 15 | 0 40 | 1 57 | — 2 |
| | 2 2 | 0 40 | 1 57 | — 2½ |
| | 3 01 | 0 32 | 1 46 | — 2½ |
| | 3 52 | 1 25 | 2 28 | — 1½ |
| | 4 57 | 0 03 | 1 22 | Zero |
| | 5 58 | 0 08 W | 1 13 | + 1½ |
| | 7 02 | 0 57 | 0 41 | + 4½ |

| April. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | ∓ |
| 30th | h. m. | ° ′ | ° ′ | ° |
| | 9 02 | 0 57 W | 1 12 E | +15 |
| | 10 02 | 0 43 | 1 12 | +19 |
| | 11 04 | 0 53 | 0 42 | +20 |
| | 12 0 | 0 03 | 1 01 | +18½ |
| | P. M. | | | |
| | 0 53 | 0 15 | 0 52 | +17½ |
| | 1 27 | 1 21 | 0 30 | +15 |
| | 2 03 | 0 50 | 0 38 | +11½ |
| | 2 33 | 1 36 E | 2 11 | + 9 |
| | 5 01 | 0 27 | 1 27 | +12 |
| | 6 01 | 0 44 | 1 41 | + 7½ |
| | 7 03 | 1 05 | 1 58 | + 3 |
| | 9 04 | 0 38 | 1 43 | — 0½ |
| | 10 1 | 1 21 | 2 13 | — 1½ |
| | 11 3 | 1 48 | 2 26 | — 2½ |
| | 12 01 | 2 30 | 3 08 | — 3 |
| May 1st | A. M. | | | |
| | 1 01 | 0 47 | 2 10 | — 3½ |
| | 1 32 | 0 46 | 1 37 | — 3½ |
| | 2 02 | 0 01 | 1 22 | — 3½ |
| | 2 30 | 0 07 W | 1 18 | — 3 |
| | 5 01 | 0 46 E | 1 34 | — 0½ |
| | 6 0 | 0 08 | 1 36 | + 3 |
| | 7 11 | 0 15 | 1 26 | + 8½ |
| | 9 01 | 0 43 W | 0 37 | +11 |
| | 10 01 | 0 45 | 0 36 | +11½ |
| | 11 01 | 1 00 | 0 23 | +12 |
| | 11 31 | 1 27 | 0 02 | +13 |
| | 12 0 | 0 18 | 0 14 W | +14 |
| | P. M. | | | |
| | 1 04 | 1 01 | 0 13 E | +21½ |
| | 1 30 | 0 25 | 0 33 | +25 |
| | 2 01 | 0 37 E | 1 13 | +27 |
| | 2 32 | 0 37 | 1 13 | +29 |
| | 3 3 | 0 10 | 1 13 | +28½ |
| | 5 7 | 0 15 | 1 17 | +13 |
| | 6 01 | 0 04 W | 1 26 | + 8½ |
| | 6 54 | 0 37 E | 1 29 | + 8 |
| | 9 0 | 0 15 | 1 37 | + 3 |
| | 10 01 | 0 21 | 1 41 | + 3 |
| | 11 00 | 0 24 | 1 40 | + 3½ |
| | 11 31 | 0 17 | 1 31 | + 3½ |
| | 11 58 | 0 17 | 1 31 | + 3½ |
| 2d | A. M. | | | |
| | 1 03 | 0 17 | 1 31 | + 2 |
| | 1 32 | 0 17 | 1 31 | + 2 |
| | 2 01 | 0 17 | 1 31 | + 2 |
| | 2 29 | 0 17 | 1 31 | + 1½ |
| | 3 3 | 0 17 | 1 31 | + 3 |
| | 5 5 | 0 01 | 0 57 | + 5½ |
| | 6 02 | 0 24 | 1 05 | + 9½ |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. | May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2 | Temp. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | A. M. | | | ∓ | 1825. | A. M. | | | ∓ |
| 2d | h. m. | ° ′ | ° ′ | ° | 4th. | h. m. | ° ′ | ° ′ | ° |
| | 7 0 | 0 30 E | 1 02 E | +13 | | 1 36 | 0 51 E | 1 21 E | + 2 |
| | 9 31 | 0 03 W | 0 28 | +26 | | 2 08 | 0 36 | 1 31 | + 2 |
| | 10 02 | 0 19 | 0 12 | +31 | | 2 31 | 0 36 | 1 31 | + 2 |
| | 10 33 | 0 06 | 0 23 | +23½ | | 4 53 | 0 07 | 1 20 | + 0½ |
| | 11 11 | 0 33 | 0 17 | +27 | | 6 01 | 0 24 W | 0 56 | + 0½ |
| | 11 31 | 0 11 | 0 23 | +24½ | | 7 02 | 0 42 | 0 24 | + 0½ |
| | 12 13 | 0 08 E | 0 46 | +23 | | 9 4 | 0 09 E | 0 52 | + 7½ |
| | P. M. | | | | | 9 32 | 0 09 | 0 52 | + 9½ |
| | 0 38 | 0 15 W | 0 36 | +23½ | | 10 1 | 0 53 W | 0 52 | +13 |
| | 1 16 | 0 34 | 0 22 | +23 | | 10 31 | 0 53 | 0 33 | +12 |
| | 1 31 | 0 46 | 0 01 W | +22½ | | 11 04 | 0 29 | 0 33 | +13½ |
| | 2 2 | 1 12 | 0 16 | +23 | | 11 31 | 1 51 | 0 02 | +13½ |
| | 2 31 | 0 29 | 0 12 E | +18 | | 12 0 | 3 51 | 2 10 W | +12 |
| | 5 0 | 0 13 E | 0 46 | +14 | | P. M. | | | |
| | 5 57 | Zero | 0 42 | +10½ | | 0 41 | 2 00 | 0 56 | +15 |
| | 7 03 | 0 06 W | 0 56 | + 7 | | 1 08 | 6 04 | 4 24 | +13½ |
| | 9 29 | 0 04 E | 0 59 | + 3½ | | 1 21 | 5 19 | 4 00 | +12½ |
| | 10 01 | 0 23 | 0 48 | + 3½ | | 1 31 | 3 21 | 3 24 | +14 |
| | 10 31 | 0 08 | 0 47 | + 3 | | 1 43 | 2 14 | 2 21 | +14 |
| | 11 11 | 0 06 | 0 47 | + 3 | | 2 01 | 2 10 | 2 14 | +15 |
| | 11 53 | 0 33 | 1 08 | + 3 | | 2 31 | 2 54 | 2 41 | +15 |
| 3d | A. M. | | | | | 3 04 | 1 27 | 1 41 | +15 |
| | 0 59 | 0 22 | 1 00 | + 3 | | 5 09 | 0 56 E | 0 07 | +19 |
| | 2 01 | 0 11 | 0 46 | + 3 | | 5 31 | 1 38 | 0 46 E | +20½ |
| | 2 31 | 0 01 W | 0 32 | + 3 | | 6 01 | 1 21 | 0 36 | +17 |
| | 5 06 | 0 08 | 0 25 | + 3 | | 7 02 | 1 02 | 0 21 | +15 |
| | 6 01 | 0 15 | 0 22 | + 4 | | 9 03 | 1 02 | 0 21 | + 3 |
| | 7 4 | 0 15 | 0 26 | + 4 | | 10 0 | 1 46 | 0 40 | — 1½ |
| | 9 31 | 1 11 | 0 11 W | + 7½ | | 11 3 | 1 46 | 0 40 | Zero |
| | 10 01 | 0 29 E | 0 01 | + 7½ | | 12 01 | 0 52 | 0 28 | 3½ |
| | 10 32 | 0 09 | 0 42 | + 7½ | 5th. | A. M. | | | |
| | 11 5 | 0 09 W | 0 36 | + 8 | | 1 1 | 1 17 | 0 39 | — 4 |
| | 11 31 | 0 04 E | 0 26 | + 8½ | | 1 31 | 1 17 | 0 39 | — 4 |
| | 12 1 | 0 24 | 0 36 | + 9½ | | 2 0 | 1 03 | 0 39 | — 4½ |
| | P. M. | | | + | | 2 31 | 1 14 | 0 41 | — 4½ |
| | 0 52 | 1 20 | ..... | .... | | 3 05 | 0 50 | 0 31 | — 5 |
| | 1 17 | 0 39 | 0 23 | +10½ | | 4 59 | 0 30 | 0 03 W | + 5½ |
| | 1 51 | 0 55 | 1 08 | +10½ | | 6 01 | 0 14 W | 0 21 | + 9 |
| | 2 32 | 0 15 | 0 18 | +10½ | | 6 51 | 0 49 | 0 54 | +10½ |
| | 5 08 | 0 15 | 0 18 | + 7½ | | 8 58 | 2 34 | 1 46 | +22 |
| | 6 01 | 0 15 | 0 18 | + 7 | | 10 0 | 5 00 | 3 24 | +20½ |
| | 7 03 | 0 15 | 0 18 | + 7 | | 10 31 | 4 30 | 3 10 | +22½ |
| | 9 31 | 0 25 | 0 59 | + 3½ | | 10 59 | 3 00 | 2 08 | +22 |
| | 10 01 | 0 27 | 1 03 | + 3 | | 12 1 | 3 02 | 2 24 | +23½ |
| | 10 31 | 0 40 | 1 08 | + 2½ | | P. M. | | | |
| | 11 01 | 0 26 | 1 09 | + 2½ | | 0 31 | 1 10 | 0 49 | +21½ |
| | 11 31 | 0 44 | 1 20 | + 2½ | | 1 4 | 5 00 | 3 36 | +27 |
| | 12 01 | 0 31 | 1 11 | + 2½ | | 1 31 | 3 24 | 2 02 | +22 |
| 4th | A. M. | | | | | 2 01 | 5 04 | 3 22 | +24 |
| | 0 55 | 0 51 | ..... | + 3 | | 2 31 | 3 47 | 2 34 | +28½ |
| | 1 15 | Zero | 1 11 E | + 1½ | | 3 4 | 4 24 | 3 04 | +29½ |

| May. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No.1. | Needle No.2. | |
| 1825. | P. M. | | | + |
| 5th. | h. m. | ° ′ | ° ′ | ° |
| | 5 3 | 1 58 W | 1 11 W | 23½ |
| | 6 02 | 0 06 E | 0 23 E | 14 |
| | 7 02 | 0 06 | 0 17 | 11½ |
| | 9 01 | 1 19 | 1 16 | 4½ |
| | 10 01 | 1 44 | 1 30 | 1 |
| | 11 01 | 1 6 | 1 00 | 0½ |
| | 12 01 | 1 41 | 1 21 | 0½ |
| 6th. | A. M | | | |
| | 1 3 | 1 41 | 1 21 | 3½ |
| | 1 31 | 1 27 | 0 56 | 1½ |
| | 2 01 | 0 19 | 0 56 | 2 |
| | 2 31 | 1 15 | 1 06 | 4 |
| | 3 01 | 1 09 | 0 46 | 4 |
| | 5 01 | 0 30 W | 0 41 W | 6½ |
| | 6 02 | 0 47 E | 0 08 E | 10½ |
| | 7 5 | 0 30 | 0 16 | 13 |
| | 9 21 | 0 25 W | 0 38 W | 19½ |
| | 9 59 | 0 59 | 0 50 | 20½ |
| | 10 31 | 3 19 | 2 20 | 23 |
| | 11 1 | 2 57 | 2 20 | 21 |
| | 11 31 | 3 52 | 2 34 | 20½ |
| | 12 01 | 3 19 | 2 34 | 21 |
| | P. M | | | |
| | 1 0 | 4 08 | 3 05 | 29½ |
| | 2 01 | 0 56 | 1 04 | 28 |
| | 3 01 | 2 45 | 2 03 | 32½ |
| | 4 56 | 1 01 E | 0 51 E | 29½ |
| | 6 03 | 0 07 | 0 16 | 23½ |
| | 7 5 | 0 21 | 0 29 | 20½ |
| | 9 31 | 2 45 | 2 25 | 10 |
| | 10 01 | 2 45 | 2 28 | 10 |
| | 10 30 | 2 01 | 2 38 | 10 |
| | 11 00 | 2 01 | 2 26 | 9 |
| | 11 53 | 1 38 | 2 26 | 8 |
| 7th. | A. M. | | | |
| | 1 0 | 1 21 | 2 12 | 5½ |
| | 2 01 | 0 43 | 2 04 | 5½ |
| | 5 5 | 0 43 | 1 28 | 11 |
| | 6 2 | 0 05 | 1 18 | 12 |
| | 7 4 | 0 27 | 1 31 | 13 |
| | 9 21 | 1 04 W | 0 26 | 15 |
| | 10 0 | 1 21 | 1 17 | 20½ |
| | 10 31 | 2 34 | 2 21 W | 23 |
| | 11 5 | 2 59 | 1 59 | 22½ |
| | 11 33 | 2 27 | 1 44 | 22 |
| | 12 01 | 4 01 | 2 38 | 22½ |
| | P. M. | | | |
| | 1 1 | 4 25 | 3 01 | 23 |
| | 1 29 | 4 15 | 3 21 | 22 |
| | 2 01 | 3 39 | 3 09 | 26½ |
| | 2 31 | 3 05 | 2 41 | 29½ |

| May. | Mean Time of Observation. | Deflections from the line of Zero. | | Temp. |
|---|---|---|---|---|
| | | Needle No.1. | Needle No.2. | |
| 1825. | P. M. | | | + |
| 7th. | h. m. | ° ′ | ° ′ | ° |
| | 2 59 | 1 04 W | 1 04 W | 30 |
| | 5 05 | 0 39 | 0 47 | 17½ |
| | 5 59 | 0 16 E | 0 04 | 18½ |
| | 7 02 | 0 53 | 0 06 E | 17½ |
| | 9 30 | 1 31 | 0 46 | 13½ |
| | 10 01 | 1 51 | 0 51 | 13½ |
| | 10 31 | 2 01 | 1 17 | 12½ |
| | 11 05 | 2 19 | 1 32 | 11½ |
| | 11 30 | 1 58 | 1 27 | 11½ |
| | 12 01 | 2 07 | 1 37 | 11½ |
| 8th. | A. M. | | | |
| | 0 52 | 2 41 | ..... | 11 |
| | 1 10 | ..... | 1 54 | 11 |
| | 1 31 | 2 25 | 1 07 | 11½ |
| | 2 10 | 3 08 | 2 03 | 12 |
| | 2 41 | 2 24 | 1 43 | 12 |
| | 4 58 | 0 32 | 0 21 | 12 |
| | 6 01 | 0 51 W | 0 20 W | 12½ |
| | 7 01 | 0 55 E | 0 55 E | 16½ |
| | 9 4 | 0 36 W | 0 24 W | 22½ |
| | 9 32 | 2 03 | 1 09 | 22½ |
| | 10 01 | 2 11 | 1 18 | 22½ |
| | 11 04 | 3 04 | 1 41 | 25½ |
| | 11 31 | 3 12 | 1 53 | 25½ |
| | 12 02 | 3 36 | 2 06 | 25½ |
| | P. M. | | | |
| | 0 51 | 1 44 E | 1 03 E | 25½ |
| | 1 29 | 3 57 W | 2 29 W | 24 |
| | 2 00 | 0 40 | 0 29 | 23 |
| | 2 32 | 0 40 | 0 21 | 24 |
| | 3 03 | 0 19 | 0 03 | 25½ |
| | 5 01 | 0 01 E | 0 16 E | 21 |
| | 6 03 | 0 28 | 0 38 | 18½ |
| | 7 01 | 0 16 | 0 23 | 16 |
| | 9 03 | 0 16 | 0 23 | 16 |
| | 10 02 | 0 16 | 0 23 | 14½ |
| | 11 01 | 0 51 | 0 23 | 12½ |
| | 12 0 | 2 00 | 1 21 | 11 |
| 9th. | A. M. | | | |
| | 0 51 | 1 43 | 1 48 | 11 |
| | 1 30 | 1 39 | 1 37 | 11 |
| | 2 0 | 2 24 | 2 16 | 11½ |
| | 2 31 | 2 19 | 2 11 | 11½ |
| | 3 5 | 1 19 | 1 49 | 12 |
| | 5 5 | 1 13 | 1 16 | 15½ |
| | 6 15 | 0 12 W | 0 58 | 17 |
| | 7 01 | 0 25 | 0 41 | 17½ |
| | 8 58 | 1 11 | 0 09 | 21 |
| | 10 1 | 1 45 | 0 16 W | 20½ |
| | 11 1 | 2 31 | 0 48 | 24 |
| | 12 1 | 1 38 | Zero. | 25 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | P. M. | | | + |
| 9th. | h. m. | ° ′ | ° ′ | ° |
| | 1 2 | 3 55 W | 1 32 W | 28½ |
| | 1 31 | 3 30 | 1 32 | 28 |
| | 2 2 | 3 01 | 1 11 | 26 |
| | 2 32 | 3 01 | 1 27 | 26½ |
| | 3 01 | 3 01 | 1 27 | 26½ |
| | 5 03 | 0 45 E | 0 31 E | 29½ |
| | 5 52 | 0 01 W | 0 31 | 27½ |
| | 6 59 | 0 52 E | 1 27 | 26 |
| | 9 1 | 2 17 | 2 01 | 19 |
| | 10 1 | 1 52 | 1 40 | 17 |
| | 11 1 | 2 21 | 2 21 | 14½ |
| | 12 1 | 1 30 | 1 57 | 13½ |
| 10th | A. M. | | | |
| | 1 4 | 1 30 | 1 57 | 12 |
| | 2 01 | 1 49 | 2 31 | 11 |
| | 2 31 | 2 49 | 2 51 | 11 |
| | 3 04 | 2 49 | 2 51 | 13 |
| | 5 0 | 0 30 | 1 28 | 17 |
| | 6 0 | 0 19 W | 1 07 | 17 |
| | 7 3 | 0 24 | 0 59 | 18 |
| | 9 31 | 0 45 | 0 26 | 21½ |
| | 10 0 | 0 18 | 0 47 | 19 |
| | 10 31 | 1 34 | 0 03 | 19 |
| | 11 1 | 2 01 | 0 25 W | 21 |
| | 11 31 | 2 5 | 0 25 | 21 |
| | 11 59 | 2 24 | 0 44 | 20 |
| | P. M. | | | |
| | 1 0 | 3 07 | 1 01 | 18 |
| | 2 1 | 2 45 | 0 47 | 17½ |
| | 3 1 | 2 25 | 0 47 | 18 |
| | 5 0 | 0 30 | 0 41 E | 12½ |
| | 6 5 | 1 19 | 0 29 | 8½ |
| | 7 03 | 0 19 | 1 07 | 6 |
| | 9 36 | 0 04 E | 1 14 | 4 |
| | 10 6 | 0 06 | 1 17 | 3½ |
| | 10 30 | 0 16 | 1 17 | 3½ |
| | 11 6 | 0 16 | 1 17 | 3½ |
| | 11 31 | 0 31 | 1 22 | 4½ |
| | 11 53 | 0 31 | 1 22 | 4½ |
| 11th | A. M. | | | |
| | 1 01 | 0 43 | 1 36 | 3½ |
| | 2 4 | 0 52 | 1 42 | 3 |
| | 2 48 | 0 35 | 1 25 | 3 |
| | 5 3 | 1 06 | 1 25 | 6½ |
| | 6 01 | 1 11 | 1 34 | 9 |
| | 6 32 | 0 26 | 1 17 | 9 |
| | 7 3 | 0 10 W | 0 42 | 9½ |
| | 9 29 | 1 39 | 0 07 W | 12 |
| | 10 0 | 1 05 | 0 08 E | 10½ |
| | 10 31 | 0 44 | 0 20 | 13 |
| | 11 3 | 1 44 | 0 01 W | 14 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | + |
| 11th | h. m. | ° ′ | ° ′ | ° |
| | 11 30 | 1 12 W | 0 01 W | 13½ |
| | 12 4 | 0 01 E | 0 40 E | 11½ |
| | P. M. | | | |
| | 0 57 | 1 29 W | 0 51 W | 9 |
| | 1 31 | 0 09 | 0 04 | 9 |
| | 2 01 | 0 49 | 0 20 | 9 |
| | 2 36 | 1 04 | 0 04 | 8½ |
| | 5 4 | 1 40 | 0 04 | 7½ |
| | 6 2 | 0 03 E | 0 36 E | 7 |
| | 7 01 | 0 03 | 0 36 | 7 |
| | 9 30 | 1 7 | 1 16 | 5½ |
| | 10 1 | 1 17 | 1 21 | 5½ |
| | 10 31 | 1 15 | 1 17 | 4½ |
| | 11 7 | 1 06 | 1 32 | 4½ |
| | 11 31 | 1 21 | 1 36 | 4 |
| | 12 1 | 1 41 | 1 52 | 4 |
| 12th | A. M. | | | |
| | 1 0 | 2 26 | 1 52 | 4 |
| | 1 40 | 1 31 | 1 46 | 3½ |
| | 2 05 | 0 46 | 1 21 | 3½ |
| | 2 33 | 0 05 W | 1 02 | 3½ |
| | 5 03 | 0 05 | 0 59 | 5½ |
| | 6 5 | 0 19 | 0 37 | 6½ |
| | 7 01 | 0 02 E | 0 52 | 11½ |
| | 9 03 | 0 06 | 0 19 | 15½ |
| | 9 30 | 0 29 W | 0 19 | 14 |
| | 10 01 | 0 46 | 0 19 | 14½ |
| | 10 31 | 0 46 | Zero | 15 |
| | 11 3 | 1 19 | 0 09 W | 14½ |
| | 11 59 | 1 53 | 0 09 | 17 |
| | P. M. | | | |
| | 0 39 | 2 20 | 0 51 | 18 |
| | 1 5 | 3 34 | 1 01 | 15½ |
| | 1 31 | 3 07 | 1 12 | 14½ |
| | 2 2 | 1 29 | 0 23 | 14½ |
| | 2 31 | 1 31 | 0 27 | 14 |
| | 3 0 | 1 31 | 0 24 | 13½ |
| | 5 03 | 0 23 | 0 26 E | 13½ |
| | 6 5 | 0 03 | 0 41 | 11½ |
| | 7 01 | 0 24 E | 0 51 | 10 |
| | 9 03 | 0 24 | 0 51 | 11 |
| | 10 1 | 0 24 | 1 22 | 8 |
| | 11 4 | 1 09 | 1 22 | 7 |
| | 12 0 | 1 37 | 1 38 | 6 |
| 13th | A. M. | | | |
| | 0 59 | 1 58 | 2 06 | 6½ |
| | 1 30 | 0 55 | 1 37 | 5½ |
| | 2 01 | 1 07 | 1 37 | 5½ |
| | 2 30 | 0 41 | 1 22 | 5½ |
| | 3 4 | 0 36 | 1 16 | 6 |
| | 5 2 | 0 55 | 0 41 | 6 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No.2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | + |
| 13th | h. m. | ° ′ | ° ′ | ° |
| | 6 01 | 0 11 W | 0 32 E | 9½ |
| | 7 6 | 0 20 | 0 26 | 11 |
| | 9 01 | 0 58 E | 1 02 | 14½ |
| | 10 5 | 0 13 W | 0 39 | 17 |
| | 11 3 | 1 38 | 0 46 W | 21½ |
| | 11 31 | Zero | 0 19 E | 21 |
| | 12 1 | 1 46 E | 1 37 | 21½ |
| | P. M. | | | |
| | 1 1 | 2 34 W | 0 21 W | 23½ |
| | 1 31 | 2 34 | 0 50 | 21½ |
| | 2 4 | 1 15 E | 1 10 E | 20 |
| | 2 30 | 2 11 | 3 41 | 19 |
| | 3 0 | 3 24 | 4 09 | 19½ |
| | 5 2 | 0 24 | 2 01 | 19½ |
| | 6 1 | 0 24 | 2 01 | 16 |
| | 6 59 | 0 56 | 1 53 | 13 |
| | 9 6 | 0 26 | 1 57 | 9½ |
| | 10 1 | 1 04 | 2 21 | 8 |
| | 11 2 | 1 52 | 2 58 | 4½ |
| | 12 1 | 0 56 | 2 06 | 3 |
| 14th | A. M. | | | |
| | 1 4 | 1 33 | 2 32 | 2½ |
| | 2 11 | 2 11 | 3 28 | 2 |
| | 3 2 | 0 48 | 2 23 | 4½ |
| | 5 05 | 0 07 W | 1 51 | 10 |
| | 6 01 | 0 31 | 0 56 | 14½ |
| | 7 5 | 0 01 E | 1 06 | 20 |
| | 9 7 | 0 05 W | 1 25 | 25 |
| | 10 11 | 0 36 | 1 13 | 30½ |
| | 11 0 | 0 54 E | 1 36 | 36 |
| | 11 34 | 0 07 | 1 11 | 35 |
| | 12 1 | 1 22 | 2 08 | 34 |
| | P. M. | | | |
| | 1 02 | 0 53 | 2 01 | 28 |
| | 2 5 | 0 19 W | 1 32 | 27½ |
| | 2 21 | 0 34 | 1 31 | 35½ |
| | 3 08 | 0 07 | 1 16 | 35½ |
| | 5 6 | 0 33 E | 0 28 | 28½ |
| | 6 03 | 0 37 | 1 41 | 25½ |
| | 7 02 | 1 06 | 2 08 | 22½ |
| | 9 41 | 1 50 | 3 06 | 19½ |
| | 10 3 | 1 51 | 3 19 | 19½ |
| | 10 31 | 1 51 | 3 12 | 18½ |
| | 11 1 | 1 51 | 3 17 | 18 |
| | 11 31 | 2 02 | 3 18 | 17½ |
| | 12 1 | 2 46 | 3 32 | 17 |
| 15th | A. M. | | | |
| | 1 4 | 1 26 | 2 42 | 17 |
| | 2 4 | 0 44 | 2 34 | 16½ |
| | 3 01 | 0 40 | 2 28 | 16½ |
| | 5 9 | 0 40 | 2 28 | 18½ |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.1. | Needle No. 2. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. | | | + |
| 15th | h. m. | ° ′ | ° ′ | ° |
| | 6 01 | 0 02 W | 2 05 E | 19 |
| | 7 5 | 0 11 | 1 22 | 22 |
| | 9 31 | 1 37 | 0 53 | 27½ |
| | 10 01 | 0 46 | 1 09 | 26 |
| | 10 29 | 2 07 | 0 27 | 30 |
| | 11 1 | 1 00 | 0 53 | 24 |
| | 11 29 | 1 4 | 0 48 | 24½ |
| | 12 01 | 0 37 E | 1 56 | 27 |
| | P. M. | | | |
| | 0 45 | 2 07 | | |
| | 1 6 | 2 37 | 2 46 | 31 |
| | 1 31 | 1 07 | 2 16 | 29½ |
| | 2 01 | 1 07 | 2 16 | 29 |
| | 2 31 | 2 55 | 2 16 | 28 |
| | 3 01 | 1 24 W | 0 09 | 30½ |
| | 5 02 | 0 41 E | 0 47 | 28½ |
| | 5 59 | 1 33 | 1 41 | 28 |
| | 7 3 | 0 31 | 1 23 | 26½ |
| | 9 31 | 0 01 | 0 47 | 18½ |
| | 10 2 | 0 09 | 1 13 | 18 |
| | 10 30 | 0 16 W | 0 02 W | 18 |
| | 11 4 | 0 16 E | 1 25 E | 16½ |
| | 11 32 | 0 16 | 1 25 | 16 |
| | 12 01 | 0 16 | 1 22 | 15 |
| 16th | A. M. | | | |
| | 1 00 | 0 45 | | |
| | 1 15 | Zero | 1 44 | 15 |
| | 1 31 | 0 55 | 1 44 | 15 |
| | 2 03 | 0 48 | 1 39 | 15 |
| | 2 31 | 0 17 | 1 26 | 14½ |
| | 3 00 | 0 28 | 1 26 | 14 |
| | 5 3 | 0 30 | 1 10 | 21½ |
| | 6 01 | 0 33 W | 0 36 | 24 |
| | 7 3 | 1 21 | 0 04 W | 26½ |
| | 9 2 | 1 51 | 0 28 | 31½ |
| | 10 01 | 1 51 | 0 09 | 31½ |
| | 11 3 | 1 11 | 0 16 E | 36 |
| | 11 31 | 0 39 | 1 44 | 36 |
| | 12 01 | 0 36 | 0 32 | 35 |
| | P. M. | | | |
| | 0 40 | 1 50 E | 2 36 | 36½ |
| | 1 0 | 1 46 | 2 09 | 35 |
| | 1 20 | 2 01 | 1 47 | 34 |
| | 1 52 | ..... | 2 17 | 30 |
| | 2 20 | ..... | 0 34 W | 28 |
| | 2 40 | ..... | 0 14 | 27 |
| | 3 10 | ..... | 0 08 E | 24 |
| | 5 5 | ..... | 0 34 | 23 |
| | 6 3 | ..... | 1 47 | 21 |
| | 7 2 | ..... | 1 26 | 18 |
| | 9 3 | ..... | 3 07 | 15 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 2. | Temp. |
|---|---|---|---|
| 1825. | P. M. | | + |
| 16th | h. m. | ° ′ | ° |
| | 10 2 | 3 07 E | 14 |
| | 11 4 | 3 07 | 13 |
| | 12 0 | 3 07 | 13 |
| 17th | A. M. | | |
| | 1 00 | 2 30 | 13½ |
| | 1 30 | 2 09 | 14 |
| | 2 3 | 2 09 | 14 |
| | 2 30 | 1 52 | 15 |
| | 3 5 | 1 49 | 16 |
| | 5 10 | 1 53 | 20 |
| | 6 2 | 1 28 | 22 |
| | 7 2 | 0 38 | 27 |
| | 9 2 | 0 10 | 30 |
| | 10 2 | 1 01 | 29 |
| | 10 33 | 0 49 | 26 |
| | 11 2 | 0 56 | 27 |
| | 11 30 | 1 49 | 26 |
| | 12 3 | 0 36 | 24 |
| | P. M. | | |
| | 1 4 | 1 30 W | 24 |
| | 1 31 | 1 30 | 24 |
| | 2 0 | 1 30 | 24 |
| | 2 33 | 2 14 | 24 |
| | 3 4 | 3 20 | 25 |
| | 5 2 | 1 00 | 25 |
| | 5 5 | 0 05 | 25 |
| | 6 2 | 0 34 | 26 |
| | 7 2 | 0 23 | 24 |
| | 9 2 | 0 18 | 21 |
| | 10 3 | 0 07 E | 19 |
| | 11 2 | 0 20 W | 17 |
| | 12 3 | 0 21 | 17 |
| 18th | A. M. | | |
| | 1 4 | 0 21 | 15 |
| | 1 31 | 0 21 | 15 |
| | 2 0 | 0 22 E | 15 |
| | 2 31 | 0 22 | 15 |
| | 3 4 | 0 22 | 17 |
| | 4 56 | 0 42 W | 20 |
| | 6 0 | 1 14 | 29 |
| | 7 0 | 1 11 | 27 |
| | 9 5 | 0 34 | 24 |
| | 9 32 | 0 07 | 24 |
| | 10 2 | 0 29 E | 25 |
| | 10 32 | 0 14 | 24 |
| | 11 2 | 0 18 | 24 |
| | 11 32 | 0 18 | 24 |
| | 12 0 | 0 48 | 24 |
| | P. M. | | |
| | 1 2 | 0 42 | 23 |
| | 1 33 | 1 07 | 25 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No 2. | Temp. |
|---|---|---|---|
| 1825. | P. M. | | + |
| 18th | h. m. | ° ′ | ° |
| | 2 4 | 1 21 E | 27 |
| | 2 33 | 0 28 | 27 |
| | 3 3 | 2 19 | 23 |
| | 4 58 | 1 11 | 26 |
| | 6 2 | 1 08 | 22 |
| | 7 0 | 1 07 | 22 |
| | 9 36 | 0 50 | 21 |
| | 10 0 | 1 23 | 21 |
| | 10 32 | 0 49 | 19 |
| | 11 11 | 0 27 | 18 |
| | 11 32 | 1 51 | 17 |
| | 12 2 | 1 46 | 17 |
| 19th | A. M. | | |
| | 1 4 | 2 11 | 16 |
| | 2 4 | 1 36 | 17 |
| | 3 5 | 1 21 | 18 |
| | 5 2 | 1 50 | 21 |
| | 6 0 | 1 50 | 29 |
| | 7 4 | 0 42 | 30 |
| | 9 30 | 0 16 | 30 |
| | 10 2 | 0 40 W | 29 |
| | 10 30 | 1 43 | 29 |
| | 11 8 | 1 20 | 29 |
| | 11 30 | 0 54 | 29 |
| | 12 01 | 1 34 | 29 |
| | P. M. | | |
| | 1 10 | 1 36 | 24 |
| | 1 30 | 2 12 | 24 |
| | 2 2 | 2 57 | 26 |
| | 2 32 | 3 34 | 25 |
| | 3 2 | 3 34 | 27 |
| | 5 7 | 0 48 E | 25 |
| | 6 02 | 0 48 | 24 |
| | 7 4 | 0 26 | 22 |
| | 9 30 | 0 29 | 16 |
| | 10 4 | 1 18 | 15 |
| | 11 32 | 1 17 | 15 |
| | 11 5 | 1 06 | 15 |
| | 11 30 | 1 06 | 15 |
| | 12 2 | 0 38 | 16 |
| 20th | A. M. | | |
| | 1 10 | 0 47 | 15 |
| | 1 32 | 1 11 | 15 |
| | 2 2 | 0 48 | 15 |
| | 3 0 | 0 50 | 15 |
| | 5 3 | 0 24 | 15 |
| | 6 6 | 0 01 | 16 |
| | 7 3 | Zero | 27 |
| | 9 6 | 1 20 W | 24 |
| | 9 28 | 1 20 | 24 |
| | 10 0 | 1 20 | 25 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No. 2. | Temp. |
|---|---|---|---|
| 1825. | A. M. | | + |
| 20th | h. m. | ° ′ | ° |
| | 11 2 | 1 20 W | 25 |
| | 11 30 | 2 44 | 26 |
| | 12 0 | 2 44 | 28 |
| | P. M. | | |
| | 0 46 | 2 41 | 30 |
| | 1 10 | 2 48 | 30 |
| | 1 30 | 3 23 | 36 |
| | 2 0 | 3 54 | 32 |
| | 2 30 | 3 48 | 33 |
| | 3 8 | 3 34 | 31 |
| | 5 5 | 2 31 | 23 |
| | 6 5 | 1 15 | 22 |
| | 7 3 | 1 18 | 19 |
| | 9 6 | 0 52 E | 17 |
| | 10 3 | 0 37 W | 16 |
| | 11 4 | 0 37 E | 15 |
| | 12 0 | 0 34 W | 14 |
| 21st | A. M. | | |
| | 1 2 | 0 32 | 14 |
| | 1 30 | 0 39 | 14 |
| | 3 2 | 0 40 | 14 |
| | 2 30 | 0 18 | 14 |
| | 3 4 | 0 22 | 14 |
| | 5 15 | 0 23 | 17 |
| | 5 35 | 0 11 E | 17 |
| | 6 10 | 0 29 | 18 |
| | 7 10 | 0 07 | 21 |
| | 9 3 | 0 57 | 32 |
| | 10 0 | 0 46 | 39 |
| | 11 0 | 1 12 W | 28 |
| | 11 33 | 1 31 | 28 |
| | 12 3 | 1 58 | 28 |
| | P. M. | | |
| | 0 55 | 1 58 | 28 |
| | 1 28 | 2 14 | 29 |
| | 2 0 | 2 14 | 31 |
| | 2 31 | 2 14 | 33 |
| | 3 0 | 3 19 | 35 |
| | 5 12 | 1 14 | 28 |
| | 6 02 | 1 02 | 26 |
| | 7 02 | 1 02 | 24 |
| | 9 3 | 0 42 | 20 |
| | 10 3 | 0 20 | 19 |
| | 11 3 | 0 12 | 18 |
| | 11 32 | 0 03 | 18 |
| | 12 04 | 0 06 E | 17 |
| 22d | A. M. | | |
| | 1 8 | 0 06 | 16 |
| | 1 32 | 0 21 | 16 |
| | 2 0 | 1 16 | 16 |
| | 2 32 | 1 21 | 16 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.2. | Temp. |
|---|---|---|---|
| 1825. | A. M. h. m. | ° ′ | + ° |
| 22d | 3 6 | 1 01 E | 16 |
| | 5 0 | 1 31 | 23 |
| | 6 0 | 0 07 | 22 |
| | 7 4 | 0 08 W | 22 |
| | 9 33 | 2 09 | 24 |
| | 10 2 | 2 59 | 25 |
| | 10 32 | 3 12 | 26 |
| | 11 0 | 2 55 | 26 |
| | 11 35 | 1 27 | 26 |
| | 12 7 | 0 11 | 26 |
| | P M | | |
| | 1 5 | 0 23 | 29 |
| | 2 4 | 0 46 E | 27 |
| | 3 0 | 0 22 | 26 |
| | 5 8 | 1 09 W | 24 |
| | 6 0 | 1 11 | 28 |
| | 7 5 | 0 44 | 28 |
| | 9 32 | 0 41 | 22 |
| | 10 2 | 0 41 | 21 |
| | 10 32 | 0 50 | 20 |
| | 11 12 | 0 50 | 19 |
| | 11 37 | 0 42 | 18 |
| | 11 57 | 1 07 | 19 |
| 23d | A. M. | | |
| | 1 2 | 1 09 | 18 |
| | 2 4 | 1 14 | 18 |
| | 3 3 | 1 09 | 18 |
| | 5 10 | 1 09 | 20 |
| | 6 0 | 1 24 | 21 |
| | 7 5 | 1 01 | 25 |
| | 9 30 | 1 11 | 25 |
| | 10 2 | 2 00 | 25 |
| | 10 32 | 1 43 | 25 |
| | 11 6 | 2 02 | 26 |
| | 11 30 | 2 18 | 27 |
| | 12 0 | 2 24 | 26 |
| | P. M. | | |
| | 0 57 | 3 25 | 25 |
| | 1 35 | 3 41 | 24 |
| | 2 2 | 2 42 | 24 |
| | 2 32 | 2 47 | 23 |
| | 3 7 | 2 28 | 23 |
| | 5 7 | 1 18 | 23 |
| | 6 7 | 1 18 | 23 |
| | 7 5 | 0 19 | 21 |
| | 9 42 | 0 20 | 18 |
| | 10 2 | 0 33 | 17 |
| | 10 30 | 0 33 | 16 |
| | 11 8 | 0 07 | 15 |
| | 11 30 | 0 10 | 15 |
| | 12 0 | 0 18 | 14 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.2 | mp. | Temp. |
|---|---|---|---|---|
| 1825. | A. M. h. m. | ° ′ | + ° | + ° |
| 24th | 1 0 | 0 27 E | 12½ | 0 |
| | 1 32 | 0 09 | 11 | |
| | 2 02 | 0 46 | 11 | |
| | 2 32 | 0 46 | 11 | |
| | 3 08 | 0 04 W | 10 | |
| | 7 16 | 1 18 | 31 | |
| | 9 7 | 1 12 | 34 | |
| | 9 38 | 1 42 | 37 | |
| | 10 0 | 1 42 01 | 37 | |
| | 10 30 | 1 24 | 38 | |
| | 11 08 | 1 09 | 38 | |
| | 11 30 | 1 09 | 38 | |
| | 12 0 | 1 09 | 30½ | |
| | P. M. | | | |
| | 0 42 | 1 43 | 24 | |
| | 1 08 | 0 36 | 21 | |
| | 1 32 | 1 10 | 21 | |
| | 2 04 | 1 21 | 21 | |
| | 2 32 | 1 14 | 21 | |
| | 3 05 | 0 38 | 22 | |
| | 5 5 | 0 44 | 26 | |
| | 6 5 | 0 31 | 35 | |
| | 7 12 | 0 50 | 32 | |
| | 9 8 | 0 11 | 31 | |
| | 10 5 | 0 11 | 20 | |
| | 11 7 | 0 15 | 15 | |
| | 12 5 | 2 16 E | 14 | |
| | A. M. | | | |
| 25th | 0 52 | 1 42 | 13 | |
| | 1 30 | 2 01 | 14 | |
| | 2 2 | 2 01 | 15 | |
| | 2 32 | 2 20 | 15 | |
| | 3 8 | 2 18 | 15 | |
| | 5 2 | 2 07 | 19 | |
| | 6 2 | 2 28 | 23 | |
| | 7 10 | 0 36 | 25 | |
| | 9 01 | 1 33 | 32 | |
| | 10 3 | 1 40 | 27 | |
| | 10 32 | 0 23 W | 27 | |
| | 11 3 | 0 31 | 26 | |
| | 11 32 | Zero | 29 | |
| | 12 2 | 0 12 E | 30 | |
| | P. M. | | | |
| | 1 6 | 0 12 | 36 | |
| | 1 33 | 0 12 | 35 | |
| | 2 2 | 0 28 | 41 | |
| | 2 35 | 0 04 W | 34 | |
| | 3 6 | 0 56 E | 34 | |
| | 5 0 | 1 11 | 35 | |
| | 6 2 | 2 04 | 41 | |
| | 7 10 | 2 26 | 32 | |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.2. | Temp. |
|---|---|---|---|
| 1825. | A. M. h. m. | ° ′ | + ° |
| 25th | 9 3 | 3 20 E | 23 |
| | 10 4 | 2 21 | 20 |
| | 11 4 | 1 51 | 19 |
| | 12 3 | 2 02 | 19 |
| 26th | A. M. | | |
| | 1 6 | 2 37 | 19 |
| | 1 30 | 2 37 | 19 |
| | 2 3 | 3 16 | 19 |
| | 2 32 | 3 23 | 20 |
| | 3 8 | 3 23 | 21 |
| | 4 58 | 3 03 | 23 |
| | 6 00 | 3 00 | 24 |
| | 7 6 | 2 56 | 25 |
| | 9 17 | 2 46 | 29 |
| | 10 2 | 1 36 | 27 |
| | 10 32 | 1 11 | 27 |
| | 11 15 | 2 53 W | 27 |
| | 12 2 | 3 11 | 27 |
| | P. M. | | |
| | 1 0 | 0 11 | 31 |
| | 2 0 | 1 26 E | 31 |
| | 2 40 | 0 29 | 33 |
| | 4 58 | 0 41 W | 34 |
| | 6 0 | 0 21 | 27 |
| | 7 8 | 0 28 | 25½ |
| | 9 2 | 0 07 E | 23 |
| | 10 0 | 0 07 | 22 |
| | 10 30 | 0 11 | 22 |
| | 11 2 | 0 11 | 21 |
| | 11 32 | 0 20 | 21 |
| | 12 00 | 0 20 | 21 |
| 27th | A. M. | | |
| | 1 3 | 0 38 | 19 |
| | 2 3 | 0 48 | 19 |
| | 3 2 | 0 36 | 20 |
| | 5 08 | 0 14 W | 20 |
| | 6 2 | 0 14 | 19 |
| | 7 7 | 0 14 | 18 |
| 28th | A. M. | | |
| | 9 7 | 0 01 E | 32 |
| | 10 2 | 0 38 | 36 |
| | 10 30 | 0 07 W | 34 |
| | 11 5 | 0 36 E | 36 |
| | 11 31 | 0 08 W | 37 |
| | 12 4 | 1 01 | 39 |
| | P. M. | | |
| | 0 42 | 0 34 | 37 |
| | 1 6 | 0 24 | 37 |
| | 1 32 | 0 33 | 37 |
| | 2 00 | 0 29 | 38 |
| | 2 32 | 0 09 | 40 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.2. | Temp. |
|---|---|---|---|
| 1825. | A. M. | | + |
| 28th | h. m. | ° ′ | ° |
| | 3 04 | 0 31 W | 41 |
| | 5 4 | 1 33 E | 35 |
| | 6 3 | 1 35 | 34 |
| | 7 2 | 1 47 | 32 |
| | 9 7 | 1 47 | 37 |
| | 10 0 | 2 39 | 36 |
| | 11 8 | 2 18 | 25 |
| | 12 0 | 2 18 | 25 |
| 29th | A. M. | | |
| | 1 10 | 1 47 | 24 |
| | 1 34 | 1 47 | 24 |
| | 2 3 | 1 56 | 24 |
| | 2 30 | 2 16 | 23 |
| | 3 6 | 1 51 | 23 |
| | 5 0 | 1 34 | 22 |
| | 6 2 | 1 43 | 22 |
| | 7 0 | 1 43 | 22 |
| | 9 4 | 0 55 | 23 |
| | 10 3 | 0 55 | 23 |
| | 11 2 | 1 31 | 23 |
| | P. M. | | |
| | 0 3 | 0 51 | 23 |
| | 1 0 | 2 02 | 26 |
| | 1 30 | 2 02 | 25 |
| | 2 0 | 2 02 | 24 |
| | 2 30 | 2 02 | 24 |
| | 3 9 | 2 02 | 23 |
| | 5 13 | 2 01 | 23 |
| | 6 17 | 2 01 | 23 |
| | 7 5 | 1 15 | 23 |
| | 9 5 | 1 31 | 23 |
| | 10 3 | 1 17 | 23 |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.2. | Temp. |
|---|---|---|---|
| 1825. | P. M. | | + |
| 29th | h. m. | ° ′ | ° |
| | 11 2 | 1 08 E | 23 |
| | 12 3 | 1 30 | 24 |
| 30th | A. M. | | |
| | 1 08 | 1 30 | 23 |
| | 1 33 | 1 30 | 23 |
| | 2 0 | 1 03 | 23 |
| | 2 33 | 1 01 | 23 |
| | 3 07 | 1 01 | 23 |
| | 5 2 | 1 26 | 23 |
| | 6 0 | 1 17 | 24 |
| | 7 4 | 1 17 | 25 |
| | 9 2 | 0 31 | 22 |
| | 10 2 | 0 28 | 30 |
| | 10 32 | 0 28 | 33 |
| | 11 7 | 0 50 | 33 |
| | 11 35 | 0 30 | 35 |
| | 12 0 | 0 11 W | 36 |
| | P. M. | | |
| | 1 3 | 1 24 | 37 |
| | 1 33 | 2 02 | 38 |
| | 2 03 | 1 04 | 37 |
| | 3 03 | 1 04 E | 38 |
| | 5 2 | 2 16 | 37 |
| | 6 0 | 1 37 | 36 |
| | 7 4 | 1 09 | 34 |
| | 9 0 | 1 53 | 31 |
| | 10 2 | 2 09 | 29 |
| | 10 30 | 2 33 | 28 |
| | 11 8 | 2 43 | 27 |
| | 11 32 | 2 39 | 27 |
| | 12 0 | 2 56 | 26½ |

| May. | Mean Time of Observation. | Deflections from the line of Zero. Needle No.2. | Temp. |
|---|---|---|---|
| 1825. | A. M. | | + |
| 31st | h. m. | ° ′ | ° |
| | 1 0 | 3 02 E | 26 |
| | 2 3 | 2 48 | 26 |
| | 2 33 | 3 11 | 26 |
| | 3 3 | 3 01 | 26 |
| | 5 31 | 1 17 | 28 |
| | 6 0 | 0 42 | 29 |
| | 6 30 | 2 13 | 30 |
| | 7 5 | 2 03 | 32 |
| | 9 30 | 1 36 | 36 |
| | 10 2 | 1 06 | 39 |
| | 10 30 | 0 53 | 39 |
| | 11 6 | 0 01 | 40 |
| | 11 32 | 0 04 | 40 |
| | 12 0 | 0 23 W | 40 |
| | P. M. | | |
| | 0 52 | 2 08 E | 41 |
| | 1 32 | 0 07 | 40 |
| | 2 2 | 1 24 W | 41 |
| | 2 30 | 0 32 E | 40 |
| | 3 7 | 0 10 W | 37 |
| | 5 5 | 1 16 E | 36 |
| | 5 58 | 0 44 W | 38 |
| | 7 4 | 1 50 E | 35 |
| | 9 30 | 1 44 | 28 |
| | 10 0 | 1 44 | 26 |
| | 10 30 | 2 01 | 24 |
| | 11 6 | 1 56 | 23 |
| | 11 32 | 1 46 | 23 |
| | 12 0 | 1 46 | 23 |

## IV. *Abstract of the daily variation of the magnetic needle No. 2, by Lieut.* FOSTER.

In the following tables are given the times of maximum and minimum diurnal variation, together with the instrumental range and value in arc of such daily change. In an adjoining column are placed indications of the relative position of the moon with respect to the sun; as there seems some reason to think that these bodies have each its influence on the needle: at all events it will be seen, that in every case the daily variation was always greater when the southern declination of the moon was greatest, and commonly a minimum when her declination was increasing to the northward.* The action of the sun, however, was much less equivocal, and its increasing effect on the daily variation was rendered very manifest as he advanced to the northward.

* The following are the means of the maximum ranges of the needle, for every three days nearest to each quadrature, opposition and conjunction.

| Months. | 1st. Quadrature. | Conjunction. | 2d. Quadrature. | Opposition. |
|---|---|---|---|---|
| | ° ′ | ° ′ | ° ′ | ° ′ |
| January | 1 25 | 2 00 | 1 33 | 2 6½ |
| February | 1 50 | 1 45 | 0 57½ | 0 41 |
| March | 2 23 | 4 15 | 1 20½ | 2 53 |
| April | 3 20 | 3 20½ | 3 5 | 2 24 |
| May | 3 57 | 4 6 | 4 2 | 1 41 |
| Means | 2 35 | 3 5½ | 2 11 | 2 9 |

From these means it appears, that the maximum deviation about the time of conjunction, exceeds those at the quadratures, and opposition, in the ratio of 3 to 2 nearly.

With a view to placing in evidence the proportional part of the annual variation due to each month, the mean of the maximum west and east expressions, has been assumed as the daily zero, or magnetic meridian; but on reference to the column containing it, there appears such irregularities in its directions, as to render any conclusions drawn from it, very unsatisfactory.

January, 1825.

| Days. | Times of maximum. Westerly daily variation. A. M. | Westerly daily variation. P. M. | Easterly daily variation. P. M. | Easterly daily variation. A. M. following day | Instrumental range. | Amount of Daily variation. | ☉ & ☽ | Mean daily zero. | Temperature at Maximum. Westerly daily variation. Inst. | Westerly daily variation. Air. | Easterly daily variation. Inst. | Easterly daily variation. Air. | Aurora. | Prevailing Winds. True Direction. | Prevailing Winds. Velocity. | Prevailing Weather, &c. &c. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | h. m. | h. m. | h. m. | h. m. | ° ′ | ° ′ | | ° ′ | ° | ° | ° | ° | | | | |
| 1 | ..... | 1 0 | 12 0 | ..... | 2 41 | 1 20½ | .. | 41 8½ | −16 | −26 | −26 | −26¼ | Not vis. | Easterly | Light | Clear and Fine. |
| 2 | 11 50 | ..... | ..... | 7 10 | 1 46 | 0 53 | .. | 41 34 | 24 | 27 | 24 | 29½ | — | — | — | Ditto. Ditto. |
| 3 | 10 0 | ..... | 12 0 | ..... | 1 40 | 0 50 | .. | 42 13 | 24 | 28 | 33 | 34 | — | — | — | Thin clouds with a haze. |
| 4 | 10 10 | ..... | 3 0 | ..... | 1 53 | 0 56½ | .. | 42 3½ | 25 | 26 | 29 | 33 | — | — | — | Hazy. |
| 5 | 11 10 | ..... | 12 0 | ..... | 5 6 | 2 33 | 8 | 43 1 | 28½ | 32½ | 31 | 36 | — | N. E. | — | A partial haze. |
| 6 | 9 45 | ..... | 11 5 | ..... | 5 40 | 2 50 | .. | 42 18 | 27 | 29½ | 29 | 34 | — | Easterly | — | Ditto. |
| 7 | 9 20 | ..... | 12 0 | ..... | 4 6 | 2 3 | .. | 41 37 | 30 | 36 | 30 | 32 | — | — | Very light | Fine and clear. |
| 8 | ..... | ..... | ..... | ..... | ..... | ..... | .. | ..... | ... | ... | ... | ... | — | — | Fresh | Hazy, with much drift. |
| 9 | ..... | ..... | ..... | ..... | ..... | ..... | .. | ..... | ... | ... | ... | ... | — | — | — | Ditto. Ditto. |
| 10 | ..... | 1 0 | 9 3 | ..... | 2 46 | 1 23 | .. | 42 15 | 32 | 33 | 33 | 37 | — | — | Light | Clear. |
| 11 | 12 0 | ..... | ..... | 1 7 | 4 3 | 2 1½ | .. | 41 11½ | 33 | 35 | 33 | 38 | — | N. E. | — | Ditto. |
| 12 | 10 10 | ..... | ..... | 1 10 | 1 42 | 0 51 | □ | 42 10 | 34½ | 16 | 35 | 38½ | Visible | — | — | Ditto. |
| 13 | ..... | 1 0 | 11 10 | ..... | 2 1 | 1 0½ | .. | 41 47½ | 25 | 18 | 16 | 16½ | Not vis. | S. E. | — | Small snow. |
| 14 | ..... | 1 20 | 11 10 | ..... | 2 44 | 1 22 | .. | 42 23 | 18½ | 25 | 18 | 20 | —, | SSE. | Strong | Snow and drift. |
| 15 | ..... | 0 15 | ..... | 2 17 | 8 26 | 4 13 | .. | 42 34 | 25 | 31 | 25 | 27 | Visible | East. | Fresh | Fine and clear. |
| 16 | ..... | 0 10 | 11 10 | ..... | 4 51 | 2 25½ | .. | 40 46½ | 28 | 26½ | 31 | 35 | — | — | Mod. | A thin haze. |
| 17 | 8 10 | ..... | 10 15 | ..... | 4 58 | 2 29 | .. | 41 33 | 30 | 24 | 26½ | 27 | — | — | — | Fine and clear. |
| 18 | ..... | 0 10 | 6 15 | ..... | 5 52 | 2 56 | .. | 41 29 | 22 | 23 | 24 | 22½ | — | — | Fresh | Overcast and cloudy. |
| 19 | ..... | 2 10 | ..... | 2 10 | 3 52 | 1 56 | ☌ | 42 0 | 18 | 28 | 23 | 23 | Not vis. | N. E. | Light | Very hazy. |
| 20 | ..... | 1 55 | 5 10 | ..... | 2 16 | 1 8 | .. | 40 20 | 24 | 30 | 28 | 28 | Visible | — | — | Clear and fine. |
| 21 | ..... | 1 40 | 6 5 | ..... | 2 35 | 1 17½ | .. | 41 52½ | 30 | 27 | 30 | 31½ | — | Northy | Strong | Very hazy W. |
| 22 | ..... | 0 55 | ..... | 0 5 | 2 41 | 1 20½ | .. | 41 3½ | 29 | 32 | 27 | 29 | — | — | Mod. | Cloudy. |
| 23 | ..... | 0 20 | 8 5 | ..... | 2 32 | 1 16 | .. | 40 14 | 25½ | 34½ | 32 | 33½ | Not vis. | NNE. | — | Hazy. |
| 24 | 11 11 | ..... | ..... | 1 10 | 2 7 | 1 3½ | .. | 41 41½ | 34 | 40 | 34 | 36 | Visible | N. E. | Light | Clear and fine. |
| 25 | ..... | 3 10 | 10 5 | ..... | 2 25 | 1 12½ | .. | 40 32½ | 39 | 29 | 40 | 44 | Not vis. | Easterly | — | Fine and clear. |
| 26 | 10 7 | ..... | ..... | 2 5 | 4 0 | 2 0 | .. | 40 51 | 38½ | 31 | 29 | 26½ | Visible | — | — | Ditto. ditto. |
| 27 | ..... | 1 10 | ..... | 3 5 | 3 50 | 1 55 | □ | 41 35 | 29 | 25½ | 31 | 33 | — | N. W. | Fresh | Hazy, with drift. |
| 28 | ..... | 0 6 | 6 10 | ..... | 1 28 | 0 44 | .. | 41 26 | 29 | 29 | 35 | 27 | — | — | — | Ditto. ditto. |
| 29 | 11 3 | ..... | 2 2 | ..... | 2 10 | 1 5 | .. | 41 41 | 28 | 27 | 29 | 28½ | — | NNW. | Mod. | Cloudy, with a dense haze. |
| 30 | 12 0 | ..... | 10 5 | ..... | 3 3 | 1 31½ | .. | 42 2½ | 25½ | 29 | 30 | 31 | — | Easterly | — | Overcast. |
| 31 | 8 5 | ..... | 6 10 | ..... | 0 52 | 0 26 | .. | 41 47 | 31 | 32½ | 35 | 36 | Not vis. | — | Fresh | Thick cloudy weather |
| Mean | 11 46 | A.M. | 10 50 | P.M. | 3 14,31 | 1 37¼ | .. | 41 36 | — | — | — | — | — | — | — | — |

*daily variation of the magnetic needle.*

February, 1825.

| Days. | Times of maximum. Westerly daily variation. A.M. | Westerly daily variation. P.M. | Easterly daily variation. P.M. | Easterly daily variation. A.M. following day | Instrumental range. | Amount of Daily variation. | ☉ & ☽ | Mean daily zero. | Temperature at maximum. Westerly daily variation. Inst. | Westerly daily variation. Air. | Easterly daily variation. Inst. | Easterly daily variation. Air. | Aurora. | Prevailing Winds. True Direction. | Prevailing Winds. Velocity. | Prevailing Weather, &c. &c. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | h. m. | h. m. | h. m. | h. m. | ° ′ | ° ′ | | ° ′ | ° | ° | ° | ° | | | | |
| 1 | 12 0 | ..... | 11 57 | ..... | 1 18 | 0 39 | .. | 41 41 | −32 | −33 | −35 | −36 | Not vis. | East | Mod. | Fine and clear. |
| 2 | ..... | 0 3 | 4 0 | ..... | 1 45 | 0 52½ | .. | 41 39½ | 37 | 40 | 39½ | 41½ | —— | —— | —— | Ditto. ditto. |
| 3 | 11 4 | ..... | 3 4 | ..... | 0 35 | 0 17½ | 8 | 41 18½ | 33 | 32 | 26½ | 26½ | —— | —— | —— | Hazy low down. |
| 4 | ..... | 2 0 | ..... | 1 0 | 1 48 | 0 54 | .. | 40 48 | 27 | 24½ | 26 | 26 | —— | —— | —— | Ditto. ditto. |
| 5 | 11 4 | ..... | 2 0 | ..... | 2 29 | 1 14½ | .. | 41 29½ | 25 | 25 | 25 | 26 | —— | NE. | —— | Cloudy. |
| 6 | ..... | 0 4 | 6 0 | ..... | 2 54 | 1 27 | .. | 40 13 | 17 | 16 | 19 | 19 | Visible. | North | Fresh | Hazy, with drift. |
| 7 | ..... | 2 0 | 10 0 | ..... | 1 33 | 0 46½ | .. | 40 47½ | 22 | 22½ | 28 | 29 | Not vis. | East | Light | Fine and clear. |
| 8 | 7 58 | ..... | ..... | 1 57 | 2 21 | 1 10½ | .. | 41 20½ | 30 | 32 | 36½ | 39½ | —— | Calm | ..... | Ditto. ditto. |
| 9 | 10 58 | ..... | ..... | 0 6 | 1 43 | 0 51½ | .. | 40 38½ | 36 | 39 | 36½ | 39½ | —— | East | Light | Ditto. ditto. |
| 10 | 6 57 | ..... | 10 58 | ..... | 1 34 | 0 47 | □ | 40 29 | 36½ | 38 | 32 | 31½ | —— | —— | —— | Not a cloud visible. |
| 11 | ..... | 2 10 | ..... | 1 32 | 7 46 | 3 53 | .. | 38 14 | 31 | 31½ | 23 | 20 | Visible. | NW. | —— | A few light clouds in zenith. |
| 12 | ..... | 1 25 | 12 0 | ..... | 5 32 | 2 46 | .. | 39 46 | 14 | 11½ | 10½ | 9 | —— | ESE. | Fresh | Hazy, with drift. |
| 13 | ..... | 2 15 | ..... | 1 3 | 4 50 | 2 25 | .. | 40 11 | 14½ | 14 | 24 | 24 | —— | —— | Light | Very hazy. |
| 14 | ..... | 0 33 | 10 43 | ..... | 10 0 | 5 0 | .. | 40 11 | 25½ | 21½ | 31 | 33 | —— | NE. | Fresh | Thick and hazy. |
| 15 | ..... | 0 28 | ..... | 1 8 | 8 50 | 4 25 | .. | 39 46 | 27½ | 30½ | 31 | 33 | —— | North | —— | Ditto. ditto. |
| 16 | ..... | 1 58 | ..... | 1 0 | 3 22 | 1 41 | .. | 40 46 | 33½ | 34 | 23 | 29½ | —— | NNW. | Light | Hazy near the horizon. |
| 17 | ..... | 2 12 | ..... | 1 0 | 5 32 | 2 46 | .. | 42 1 | 18 | 16½ | 25 | 25 | Not vis. | North | —— | Fine thin clouds. |
| 18 | 12 0 | ..... | ..... | 5 3 | 1 37 | 0 48½ | ☌ | 41 11½ | 26½ | 26 | 30 | 32 | —— | ESE | —— | Clear fine W. |
| 19 | 10 58 | ..... | ..... | 2 4 | 3 50 | 1 55 | .. | 40 21 | 27 | 29 | 35½ | 37 | Visible. | NE | —— | Fine and clear. |
| 20 | ..... | 0 18 | 10 0 | ..... | 3 22 | 1 41 | .. | 40 21 | 31 | 34½ | 37 | 40½ | —— | —— | —— | Ditto. ditto. |
| 21 | 7 0 | ..... | ..... | 2 10 | 3 47 | 1 53½ | .. | 41 18½ | 39 | 42 | 31½ | 33 | —— | Northy | —— | Hazy near the horizon. |
| 22 | 10 56 | ..... | ..... | 1 58 | 4 21 | 2 10½ | .. | 40 6½ | 29 | 31 | 29 | 29 | —— | Calm | Calm | Fine and clear. |
| 23 | 10 48 | ..... | ..... | 1 8 | 3 33 | 1 46½ | .. | 41 6½ | 25 | 25 | 27 | 27 | —— | ESE. | Mod. | Hazy. |
| 24 | 10 4 | ..... | ..... | 0 58 | 0 39 | 0 19½ | .. | 41 5½ | 27½ | 29 | 29 | 29 | —— | East | Fresh | Overcast. |
| 25 | 10 5 | ..... | ..... | 1 6 | 1 30 | 0 45 | .. | 40 46 | 28 | 31½ | 27½ | 27 | —— | —— | Mod. | Fine and clear. |
| 26 | ..... | 1 5 | 11 0 | ..... | 2 49 | 1 24½ | □ | 40 51½ | 16 | 17 | 11 | 8½ | Not vis. | —— | Strong | Fine, with drift. |
| 27 | ..... | 1 9 | 9 50 | ..... | 1 28 | 0 44 | .. | 41 23 | 11 | 8½ | 14 | 13 | —— | —— | Mod. | Thick and hazy. |
| 28 | ..... | 0 2 | ..... | 2 2 | 0 39 | 0 19½ | .. | 41 49½ | 10 | 22 | 24 | 22½ | —— | North | Light | Fine and clear. |
| Mean | 11 46 A.M. | | 11 23 P.M. | | 3 16 | 1 38 | .. | 40 48 | .... | .... | .... | .... | ..... | ..... | ..... | ..... |

March 1825.

| Days. | Times of maximum. Westerly daily variation. A. M. | Westerly daily variation. P. M. | Easterly daily variation. P. M. | Easterly daily variation. A. M. following day | Instrumental range. | Amount of daily variation. | ☉ & ☽ | Mean daily zero. | Temperature at maximum. Westerly daily variation. Inst. | Westerly daily variation. Air. | Easterly daily variation. Inst. | Easterly daily variation. Air. | Aurora. | Prevailing Winds. True Direction. | Prevailing Winds. Velocity. | Prevailing Weather, &c. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | h. m. | h. m. | h. m. | h. m. | ° ′ | ° ′ | | ° ′ | ° | ° | ° | ° | | | | |
| 1 | 11 2 | ..... | 4 58 | ..... | 3 53 | 1 56½ | .. | 41 21½ | —27 | —33 | —33 | —38 | Not vis. | Variable | Moderate | Hazy with drift. |
| 2 | 10 5 | ..... | 10 50 | ..... | 2 5 | 1 2½ | .. | 41 22½ | 34 | 45 | 39 | 41 | — | East | Light | Cloudy. |
| 3 | 11 22 | ..... | 11 58 | ..... | 4 59 | 2 29½ | .. | 40 37½ | 27 | 26 | 27 | 26 | — | — | Squally | A. M. fine, P. M. hazy. |
| 4 | ..... | 0 4 | 9 35 | ..... | 4 0 | 2 0 | .. | 42 0 | 22 | 30 | 32 | 34 | — | — | Light | Cloudy. |
| 5 | 10 33 | ..... | 3 2 | ..... | 2 21 | 1 10½ | 8 | 42 30½ | 26 | 29 | 23 | 30 | — | — | — | A. M. hazy, P. M. fine. |
| 6 | 7 3 | ..... | 10 58 | ..... | 2 53 | 1 26½ | .. | 41 53½ | 23 | 23 | 36 | 39 | — | Southerly | Strong | Hazy with drift. |
| 7 | 10 25 | ..... | ..... | 2 50 | 2 24 | 1 12 | .. | 41 15 | 29 | 26 | 30 | 31 | — | Westerly | Light | A. M. hazy, P. M. clear. |
| 8 | 11 58 | ..... | 10 40 | ..... | 3 3 | 1 31½ | .. | 41 53½ | 25 | 26 | 31 | 32 | — | Easterly | — | Cloudy. |
| 9 | 10 0 | ..... | 3 0 | ..... | 2 15 | 1 7½ | .. | 41 56½ | 26 | 27 | 24 | 26 | Visible | — | — | Fine and clear. |
| 10 | 10 7 | ..... | 7 3 | ..... | 2 34 | 1 17 | .. | 41 13 | 22 | 28 | 30 | 33 | — | — | — | Ditto ditto |
| 11 | 11 35 | ..... | 11 0 | ..... | 7 19 | 3 39½ | .. | 42 26½ | 16 | 31 | 33 | 37 | Not vis. | — | — | Ditto ditto |
| 12 | 11 6 | ..... | ..... | 0 3 | 4 26 | 2 13 | □ | 42 0 | 18 | 31 | 30 | 33 | Visible | Calm | Calm | Ditto ditto |
| 13 | ..... | 0 23 | ..... | 1 3 | 6 37 | 3 18½ | .. | 40 3½ | 15 | 32 | 32 | 35 | Not vis. | — | — | Ditto ditto |
| 14 | ..... | 0 33 | ..... | 5 8 | 6 40 | 3 20 | .. | 38 40 | 14 | 30 | 32 | 33 | — | Easterly | Light | Ditto ditto |
| 15 | ..... | 4 30 | 7 10 | ..... | 2 31 | 1 15½ | .. | 41 45½ | 20 | 24 | 31 | 25 | — | — | — | Ditto ditto |
| 16 | ..... | 2 8 | ..... | 1 33 | 3 43 | 1 51½ | .. | 41 33½ | 21 | 25 | 27 | 27 | — | N. W. | Squally | Hazy with drift. |
| 17 | 10 3 | ..... | 9 24 | ..... | 2 9 | 1 4½ | .. | 41 35½ | 22 | 24 | 27 | 27 | — | — | Strong | Ditto ditto |
| 18 | ..... | 0 38 | ..... | 1 5 | 6 14 | 3 7 | .. | 42 48 | 16 | 20 | 24 | 22 | — | — | Squally | Ditto ditto |
| 19 | ..... | 1 9 | 10 18 | ..... | 10 52 | 5 26 | .. | 40 6 | 15 | 21 | 22 | 22 | — | — | Moderate | Overcast. |
| 20 | 11 48 | ..... | ..... | 4 0 | 8 22 | 4 11 | ☌ | 40 21 | 14 | 20 | 25 | 26 | — | — | Fresh | Ditto. |
| 21 | 7 55 | ..... | ..... | 1 3 | 5 48 | 2 54 | .. | 41 39 | 20 | 25 | 32 | 35 | — | Westerly | — | Ditto. |
| 22 | 11 46 | ..... | ..... | 2 5 | 3 40 | 1 50 | .. | 41 30 | 7 | 16 | 30 | 34 | — | Easterly | Light | Fine and clear. |
| 23 | ..... | 1 18 | ..... | 1 32 | 5 20 | 2 40 | .. | 40 40 | 9 | 26 | 33 | 37 | — | — | — | Extremely clear. |
| 24 | 9 28 | ..... | ..... | 1 8 | 3 44 | 1 52 | .. | 41 17 | 14 | 32 | 34 | 39 | — | Calm | Calm | Ditto. |
| 25 | 10 4 | ..... | 3 3 | ..... | 3 4 | 1 32 | .. | 41 58 | 30 | 32 | 13 | 30 | — | Variable | Light | Fine, horizon hazy. |
| 26 | 10 33 | ..... | ..... | 3 4 | 2 12 | 1 6 | .. | 41 38 | 16 | 24 | 24 | 24 | — | North | Moderate | Ditto ditto. |
| 27 | ..... | 1 0 | ..... | 1 5 | 3 58 | 1 59 | .. | 41 22 | 6 | 15 | 26 | 25 | — | N. E. | — | Hazy. |
| 28 | ..... | 1 12 | 10 30 | ..... | 1 53 | 0 56½ | □ | 41 33½ | 10 | 18 | 23 | 23 | — | N. W. | Light | Overcast. |
| 29 | 10 3 | ..... | 1 28 | ..... | 5 15 | 2 37½ | .. | 42 45½ | 5 | 22 | 8 | 19 | — | East | — | Cloudy. |
| 30 | 9 58 | ..... | ..... | 1 3 | 4 43 | 2 21½ | .. | 41 25½ | 12 | 25 | 31 | 35 | — | — | — | Fine and clear. |
| 31 | ..... | 0 2 | ..... | 3 38 | 7 24 | 3 42 | .. | 40 42 | 12 | 26 | 32 | 36 | — | — | — | Ditto ditto. |
| Mean | 11 25 A. M. | | 10 43 P. M. | | 4 28.37 | 2 14¼ | | 41 29½ | — | — | — | — | — | — | — | — |

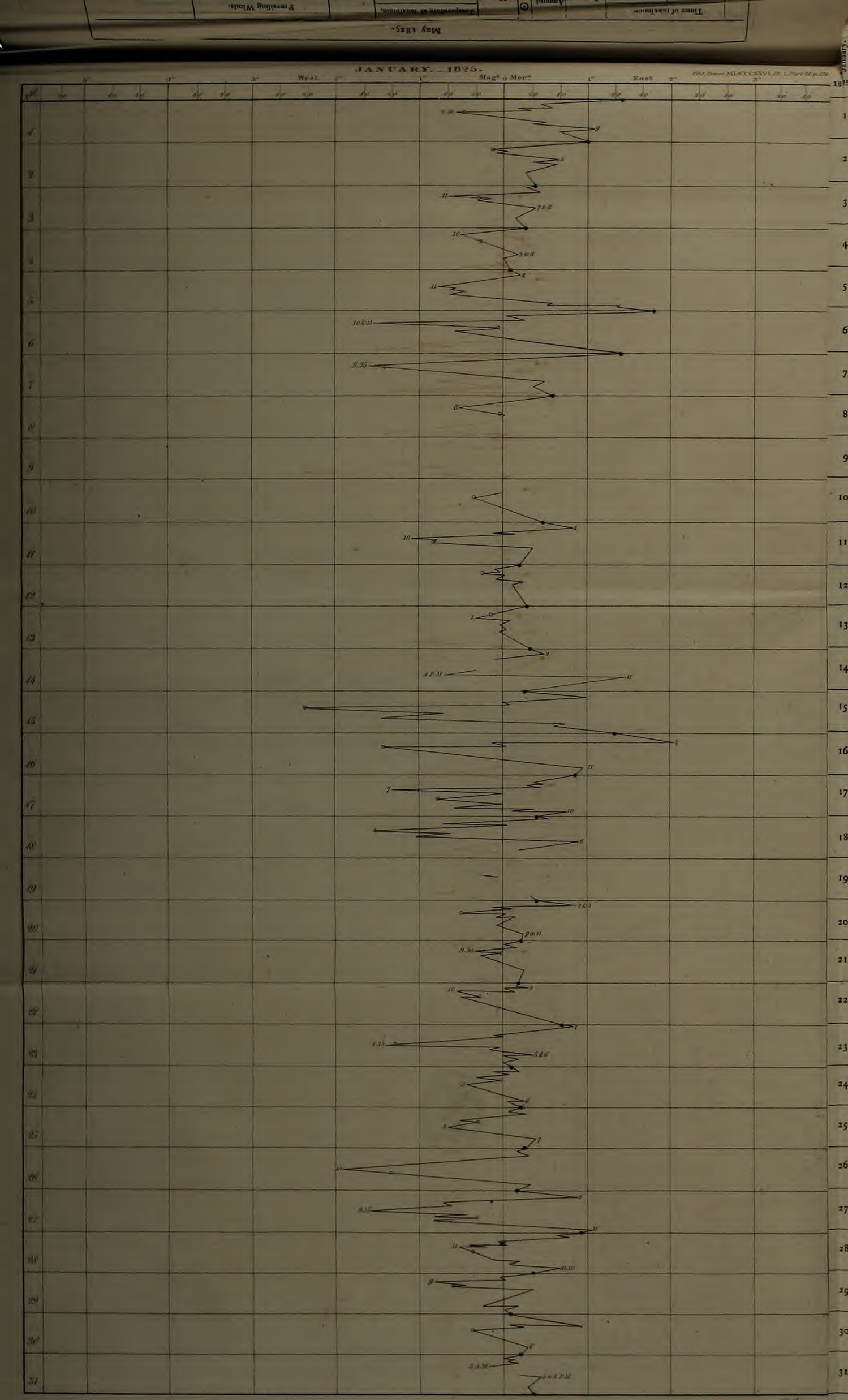
*daily variation of the magnetic needle.*

April 1825.

| Days. | Times of maximum. Westerly daily variation. A. M. | Westerly daily variation. P. M. | Easterly daily variation. P. M. | Easterly daily variation. A. M. foll$^{g}$ day. | Instrumental range. | Amount of daily variation. | ☉ & ☽ | Mean daily zero. | Temperature at maximum. Westerly daily varia$^{n}$. Inst. | Westerly daily varia$^{n}$. Air. | Easterly daily varia$^{n}$. Inst. | Easterly daily varia$^{n}$. Air. | Aurora. | Prevailing Winds. True Direction. | Prevailing Winds. Velocity. | Prevailing Weather, &c. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | h. m. | h. m. | h. m. | h. m. | ° ′ | ° ′ | | ° ′ | ° | ° | ° | ° | | | | |
| 1 | ..... | 0 58 | 11 5 | ..... | 8 8 | 4 4 | .. | 42 11 | −10 | −25 | −31 | −35 | Not vis. | East | Light | Fine and clear. |
| 2 | 10 55 | ..... | ..... | 1 0 | 4 1 | 2 0½ | .. | 41 22½ | 12 | 25 | 28 | 29 | — | — | Fresh | A. M. fine, P. M. hazy. |
| 3 | 10 0 | ..... | ..... | 5 7 | 4 49 | 2 24½ | ☌ | 39 46½ | 12 | 23 | 27 | 28 | — | — | Moderate | Hazy, with small snow. |
| 4 | ..... | 0 3 | 2 0 | ..... | 5 37 | 2 48½ | .. | 41 36½ | 3 | 19 | 10 | 20 | — | Calm | — | Fine and clear. |
| 5 | 9 35 | ..... | 12 0 | ..... | 4 57 | 2 28½ | .. | 42 36½ | 2 | 26 | 30 | 35 | — | East | Light | Ditto ditto. |
| 6 | 10 0 | ..... | 3 0 | ..... | 5 19 | 2 39½ | .. | 41 11 | 8 | 26 | 11 | 28 | — | — | — | Ditto ditto. |
| 7 | ..... | 2 2 | ..... | 1 3 | 6 33 | 3 16½ | .. | 41 32½ | 7 | 20 | 28 | 29 | — | — | — | Ditto ditto. |
| 8 | ..... | 1 2 | 11 12 | ..... | 9 19 | 4 39½ | .. | 41 24½ | 10 | 17 | 24 | 25 | — | — | Moderate | Ditto ditto. |
| 9 | ..... | 1 2 | ..... | 2 57 | 11 56 | 5 58 | .. | 41 38 | 10 | 14 | 17 | 18 | — | — | — | Ditto ditto. |
| 10 | ..... | ..... | ..... | ..... | ..... | ..... | .. | .... | .. | .... | .... | .... | .... | — | Fresh | Ditto ditto. |
| 11 | ..... | 1 0 | ..... | 0 3 | 8 6 | 4 3 | □ | 38 47 | + 1 | 4 | + 2 | + 2 | — | N. N. E. | Strong | Ditto ditto. |
| 12 | ..... | 1 8 | ..... | 6 1 | 4 19 | 2 9½ | .. | 40 56½ | +13 | +15 | — 3 | — 3 | — | — | Squally | Hazy, with drift. |
| 13 | ..... | 1 30 | ..... | 3 7 | 4 5 | 2 2½ | .. | 41 5 | Zero | 3 | −14 | −16 | — | — | Light | Cloudy. |
| 14 | ..... | 0 30 | 11 0 | ..... | 9 8 | 4 34 | .. | 40 54 | — 4 | + 5 | −13 | −14 | — | Calm | Calm | Hazy. |
| 15 | 11 0 | ..... | 3 0 | ..... | 2 43 | 1 21½ | .. | 41 19½ | 1 | 8 | + 1 | — 6 | — | — | — | Ditto. |
| 16 | 2 0 | ..... | 11 7 | ..... | 6 9 | 3 4½ | .. | 41 58½ | 15 | +15 | — 6 | 5 | — | East | Light | Fine and clear. |
| 17 | 12 0 | ..... | ..... | 0 4 | 8 35 | 4 17½ | .. | 43 12½ | +24 | 26 | — 8 | + 8 | — | — | Moderate | Ditto ditto. |
| 18 | 6 0 | ..... | 2 32 | ..... | 5 19 | 2 39½ | ☾ | 43 44½ | — 3 | — 8 | +11 | 2 | — | — | Fresh | A. M. fine, P. M. hazy. |
| 19 | ..... | 1 30 | ..... | 2 2 | 3 43 | 1 51½ | .. | 43 17½ | + 8 | + 2 | Zero | 2 | — | — | — | Hazy. |
| 20 | 11 52 | ..... | 9 35 | ..... | 4 27 | 2 13½ | .. | 43 36½ | 9 | 14 | + 5 | 8 | — | — | Light | Ditto. |
| 21 | ..... | 0 6 | ..... | 5 0 | 5 1 | 2 30½ | .. | 42 21½ | 16 | 17 | — 4 | 1 | — | — | Fresh | Cloudy. |
| 22 | ..... | 0 42 | 3 0 | ..... | 6 8 | 3 4 | .. | 41 45 | 23 | 19 | +25 | 15 | — | North | Moderate | Ditto. |
| 23 | ..... | 2 4 | ..... | 1 5 | 5 27 | 2 43½ | .. | 42 31½ | 9 | 11 | 4 | 7 | — | — | — | Hazy, with snow. |
| 24 | 9 30 | ..... | ..... | 3 4 | 2 38 | 1 19 | .. | 43 13 | 5 | 3 | 2 | 1 | — | N. W. | Light | Hazy. |
| 25 | ..... | 0 50 | ..... | 1 5 | 7 23 | 3 41½ | .. | 44 1½ | 18 | 15 | ½ | 1 | — | — | — | Cloudy. |
| 26 | 10 4 | ..... | 10 3 | ..... | 4 12 | 2 6 | .. | 42 0 | 11 | 6 | — 2 | 2 | — | Variable | — | Ditto. |
| 27 | 11 2 | ..... | ..... | 0 4 | 4 30 | 2 15 | □ | 43 58 | 12 | 12 | Zero | Zero | — | South | — | Hazy, with snow. |
| 28 | 11 2 | ..... | 11 58 | ..... | 3 45 | 1 52½ | .. | 43 7½ | 17 | 11 | — 4 | — 4 | — | East | — | Ditto. |
| 29 | 6 3 | ..... | 2 12 | ..... | 4 17 | 2 8½ | .. | 44 30½ | — 1 | Zero | +15 | +17 | — | — | — | A. M. fine, P. M. hazy. |
| 30 | ..... | 1 28 | 12 0 | ..... | 5 17 | 2 38½ | .. | 45 6½ | +10 | + 2½ | — 3 | — 5 | — | North | — | Cloudy. |
| Mean | 11 13 | A. M. | 11 13 | P. M. | 5 45.28 | 2 52.44 | | 42 13.46 | — | — | — | — | — | — | — | — |

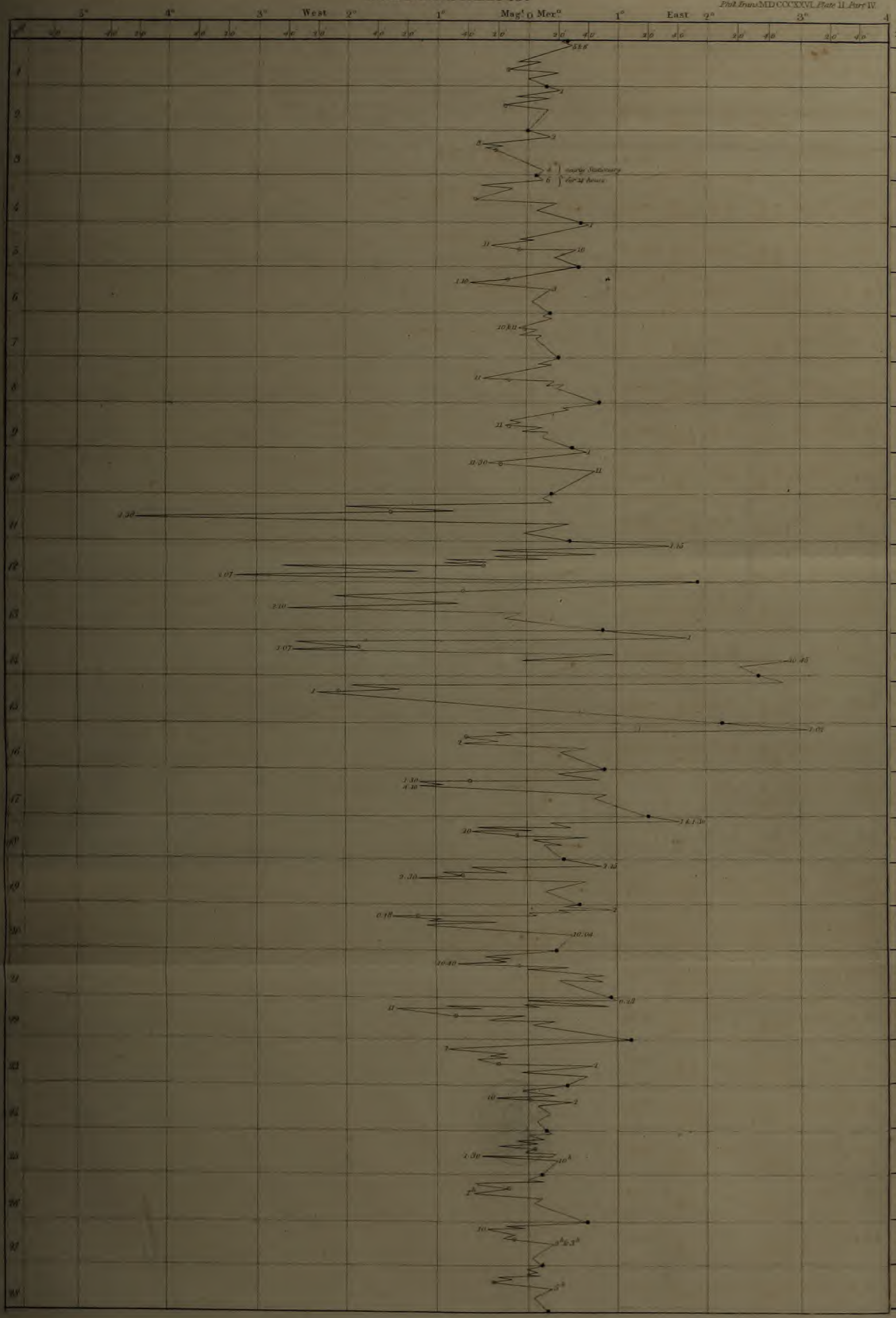
May 1825.

| Days. | Times of maximum. Westerly daily variation. A.M. | Westerly daily variation. P. M. | Easterly daily variation. P. M. | Easterly daily variation. A. M. foll$^{g}$ day. | Instrumental range. | Amount of daily variation. | ☉ & ☽ | Mean daily zero. | Temperature at maximum. Westerly daily varia$^{n}$. Inst. | Westerly daily varia$^{n}$. Air. | Easterly daily varia$^{n}$. Inst. | Easterly daily varia$^{n}$. Air. | Aurora. | Prevailing Winds. True Direction. | Prevailing Winds. Velocity. | Prevailing Weather, &c. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | h. m. | h. m. | h. m. | h. m. | ° ′ | ° ′ | | ° ′ | ° | ° | ° | ° | | | | |
| 1 | ..... | 0 3 | 10 3 | ..... | 3 50 | 1 55 | .. | 42 55 | +11 | +11 | + 2 | + 3 | Not vis. | West | Light | Hazy, with small snow. |
| 2 | ..... | 2 4 | 11 53 | ..... | 2 49 | 1 24½ | 8 | 42 19½ | 14 | 9 | 2 | 3 | — | East | — | Squally. |
| 3 | 9 33 | ..... | ..... | 2 10 | 3 26 | 1 43 | .. | 42 48 | 5 | 9 | 1½ | 3 | — | A. M. E. P. M. S.W. | Strong | Much drift. |
| 4 | ..... | 1 10 | 5 33 | ..... | 10 20 | 5 10 | .. | 37 50 | 12 | 13 | 18 | 12 | — | — | Fresh | Cloudy, with drift. |
| 5 | ..... | 1 3 | ..... | 0 3 | 9 56 | 4 58 | .. | 39 11 | 25 | 9 | 0 | 1 | — | East | Light | Fine and clear. |
| 6 | ..... | 1 2 | 10 30 | ..... | 11 27 | 5 43½ | .. | 41 1 | 21 | 20 | 10 | 10 | — | West | — | Hazy. |
| 7 | ..... | 1 29 | ..... | 2 11 | 10 50 | 5 25 | .. | 40 10 | 21 | 20 | 12 | 12 | — | East | — | Cloudy. |
| 8 | ..... | 1 28 | ..... | 2 0 | 9 31 | 4 45½ | .. | 41 15½ | 21 | 21 | 11 | 12 | — | — | — | Hazy. |
| 9 | ..... | 1 2 | ..... | 2 30 | 8 46 | 4 23 | .. | 42 47 | 27 | 25 | 10 | 14 | — | West | Squally. | Hazy, with constant |
| 10 | ..... | 1 2 | ..... | 2 6 | 5 27 | 2 43½ | □ | 42 8½ | 18 | 11 | 3 | 4 | — | — | — | Ditto ditto [snow. |
| 11 | 9 28 | ..... | ..... | 0 2 | 3 59 | 1 59½ | .. | 43 17½ | 13 | 9 | 3 | 3 | — | — | — | Ditto ditto |
| 12 | ..... | 1 33 | ..... | 1 0 | 6 37 | 3 18½ | .. | 42 21½ | 11 | 15 | 6 | 7 | — | — | Light | Ditto ditto |
| 13 | ..... | 1 30 | 2 59 | ..... | 9 58 | 4 59 | .. | 44 47 | 21 | 21 | 20 | 21 | — | — | — | Ditto ditto |
| 14 | 6 2 | ..... | ..... | 0 2 | 5 12 | 2 36 | .. | 45 56 | 10 | 9 | 17 | 18 | — | — | — | Ditto ditto |
| 15 | ..... | 3 2 | ..... | 1 15 | 3 9 | 1 34½ | .. | 43 21½ | 28 | 33 | 15 | 14 | — | — | — | Ditto ditto |
| 16 | ..... | 2 20 | 9 3 | ..... | 7 23 | 3 41½ | .. | 44 1½ | 28 | 22 | 15 | 16 | — | North | Moderate | Ditto ditto |
| 17 | ..... | 3 4 | ..... | 2 0 | 7 24 | 3 42 | .. | 38 31½ | 25 | 27 | 15 | 18 | — | N. E. | Fresh | Ditto ditto |
| 18 | 6 0 | ..... | 3 3 | ..... | 7 6 | 3 33 | 6 | 42 33 | 29 | 27 | 23 | 21 | — | North | — | Ditto ditto |
| 19 | ..... | 2 32 | 10 4 | ..... | 9 45 | 4 52½ | .. | 39 11½ | 25 | 22 | 15 | 14 | — | East | — | Ditto ditto |
| 20 | ..... | 2 0 | 9 6 | ..... | 9 33 | 4 46½ | .. | 38 26½ | 32 | 31 | 17 | 17 | — | — | Light | Cloudy. |
| 21 | ..... | 3 0 | ..... | 5 0 | 9 41 | 4 50½ | .. | 39 39½ | 35 | 29 | 23 | 19 | — | — | — | Ditto. |
| 22 | 10 32 | ..... | 2 4 | ..... | 7 57 | 3 58½ | .. | 39 1½ | 26 | 26 | 27 | 27 | — | — | Fresh | Light clouds. |
| 23 | ..... | 1 35 | ..... | 2 2 | 8 53 | 4 26½ | .. | 38 43 | 24 | 18 | 11 | 10 | — | North | — | Small snow. |
| 24 | 9 38 | ..... | ..... | 6 2 | 8 21 | 4 10½ | .. | 42 14½ | 37 | 19 | 23 | 19 | — | Calm | Calm | Very fine and clear. |
| 25 | 11 3 | ..... | ..... | 2 33 | 7 50 | 3 55 | □ | 44 20 | 26 | 25 | 20 | 21 | — | North | Light | Overcast. |
| 26 | ..... | 0 2 | ..... | 2 3 | 7 59 | 3 59½ | .. | 39 4½ | 27 | 32 | 19 | 21 | — | — | Moderate | Cloudy. |
| 27 | ..... | ..... | ..... | ..... | ..... | ..... | .. | ..... | .... | .... | ..... | .... | ..... | ..... | ..... | Hazy, with drift. |
| 28 | ..... | 0 4 | 10 0 | ..... | 7 22 | 3 41 | .. | 43 6 | 39 | 33 | 36 | 26 | — | West | Fresh | Ditto ditto. |
| 29 | ..... | 0 3 | 1 0 | ..... | 2 22 | 1 11 | .. | 44 22 | 23 | 27 | 26 | 25 | — | S. E. | Strong | Cloudy. |
| 30 | ..... | 1 13 | ..... | 2 33 | 10 26 | 5 13 | .. | 42 37 | 38 | 38 | 26 | 27 | — | E. S. E. | Moderate | Ditto. |
| 31 | ..... | 2 2 | ..... | 2 34 | 7 20 | 3 40 | 8 | 42 20 | 41 | 35 | 28 | 25 | — | — | Calm | Fine. |
| Mean. | 12 25 A. M. | | 11 19 P. M. | | 7 29.38 | 3 44.39 | – | 40 10.40 | — | — | — | — | — | — | — | — |




| January. 1825. | Sun's Zenith Distance. | | Moon on the South Meridian. | | Moon on the North Meridian. | |
|---|---|---|---|---|---|---|
| | On the S. Meridian. | On the N. Meridian. | Time of passing. | Zenith Distance. | Time of passing. | Zenith Distance. |
| | ° ′ | ° ′ | h. m. | ° ′ | h. m. | ° ′ |
| 1 | 96 14 | 129 43 | 9 20 P. M. | 49 47 | 8 53 A. M. | 83 46 |
| 2 | 96 09 | 129 38 | 10 17 P. M. | 49 14 | 9 48 A. M. | 82 55 |
| 3 | 96 03 | 129 32 | 11 16 P. M. | 50 09 | 10 46 A. M. | 83 02 |
| 4 | 95 57 | 129 25 | | | 11 44 A. M. | 84 45 |
| 5 | 95 50 | 129 18 | 0 14 A. M. | 52 42 | 0 43 P. M. | 88 02 |
| 6 | 95 43 | 129 11 | 1 11 A. M. | 56 39 | 1 39 P. M. | 92 34 |
| 7 | 95 35 | 129 03 | 2 06 A. M. | 61 46 | 2 33 P. M. | 97 54 |
| 8 | 95 27 | 128 55 | 2 58 A. M. | 67 26 | 3 23 P. M. | 104 10 |
| 9 | | | | | | |
| 10 | 95 09 | 128 36 | 4 39 A. M. | 79 37 | 5 04 P. M. | 116 00 |
| 11 | 95 00 | 128 27 | 5 30 A. M. | 85 09 | 5 55 P. M. | 121 11 |
| 12 | 94 51 | 128 18 | 6 21 A. M. | 89 52 | 6 47 P. M. | 125 26 |
| 13 | 94 41 | 128 08 | 7 13 A. M. | 93 40 | 7 40 P. M. | 128 34 |
| 14 | 94 31 | 127 57 | 8 04 A. M. | 96 08 | 8 31 P. M. | 130 24 |
| 15 | 94 20 | 127 46 | 8 58 A. M. | 97 10 | 9 25 P. M. | 130 43 |
| 16 | 94 08 | 127 34 | 9 52 A. M. | 96 53 | 10 19 P. M. | 129 44 |
| 17 | 93 56 | 127 22 | 10 45 A. M. | 95 20 | 11 10 P. M. | 127 35 |
| 18 | 93 44 | 127 10 | 11 35 A. M. | 92 36 | | |
| 19 | 93 31 | 126 57 | 0 25 P. M. | 88 55 | 00 02 A. M. | 124 24 |
| 20 | 93 18 | 126 44 | 1 09 P. M. | 84 43 | 0 47 A. M. | 120 26 |
| 21 | 93 05 | 126 31 | 1 51 P. M. | 80 07 | 1 30 A. M. | 115 58 |
| 22 | 92 51 | 126 17 | 2 31 P. M. | 75 18 | 2 11 A. M. | 111 05 |
| 23 | 92 37 | 126 02 | 3 11 P. M. | 70 14 | 2 51 A. M. | 106 12 |
| 24 | 92 23 | 125 47 | 3 52 P. M. | 65 23 | 3 31 A. M. | 101 20 |
| 25 | 92 08 | 125 32 | 4 34 P. M. | 60 53 | 4 13 A. M. | 96 39 |
| 26 | 91 53 | 125 17 | 5 19 P. M. | 56 48 | 4 56 A. M. | 92 17 |
| 27 | 91 37 | 125 01 | 6 06 P. M. | 53 20 | 5 41 A. M. | 88 30 |
| 28 | 91 21 | 124 45 | 6 58 P. M. | 50 47 | 6 32 A. M. | 85 29 |
| 29 | 91 05 | 124 29 | 7 54 P. M. | 49 32 | 7 25 A. M. | 83 28 |
| 30 | 90 49 | 124 13 | 8 52 P. M. | 49 32 | 8 23 A. M. | 82 48 |
| 31 | 90 32 | 123 56 | 9 50 P. M. | 51 09 | 9 21 A. M. | 83 41 |

Note. *The dark circular spots indicate Midnight: the light ones Noon; and the intervening figures the intermediate hours.*

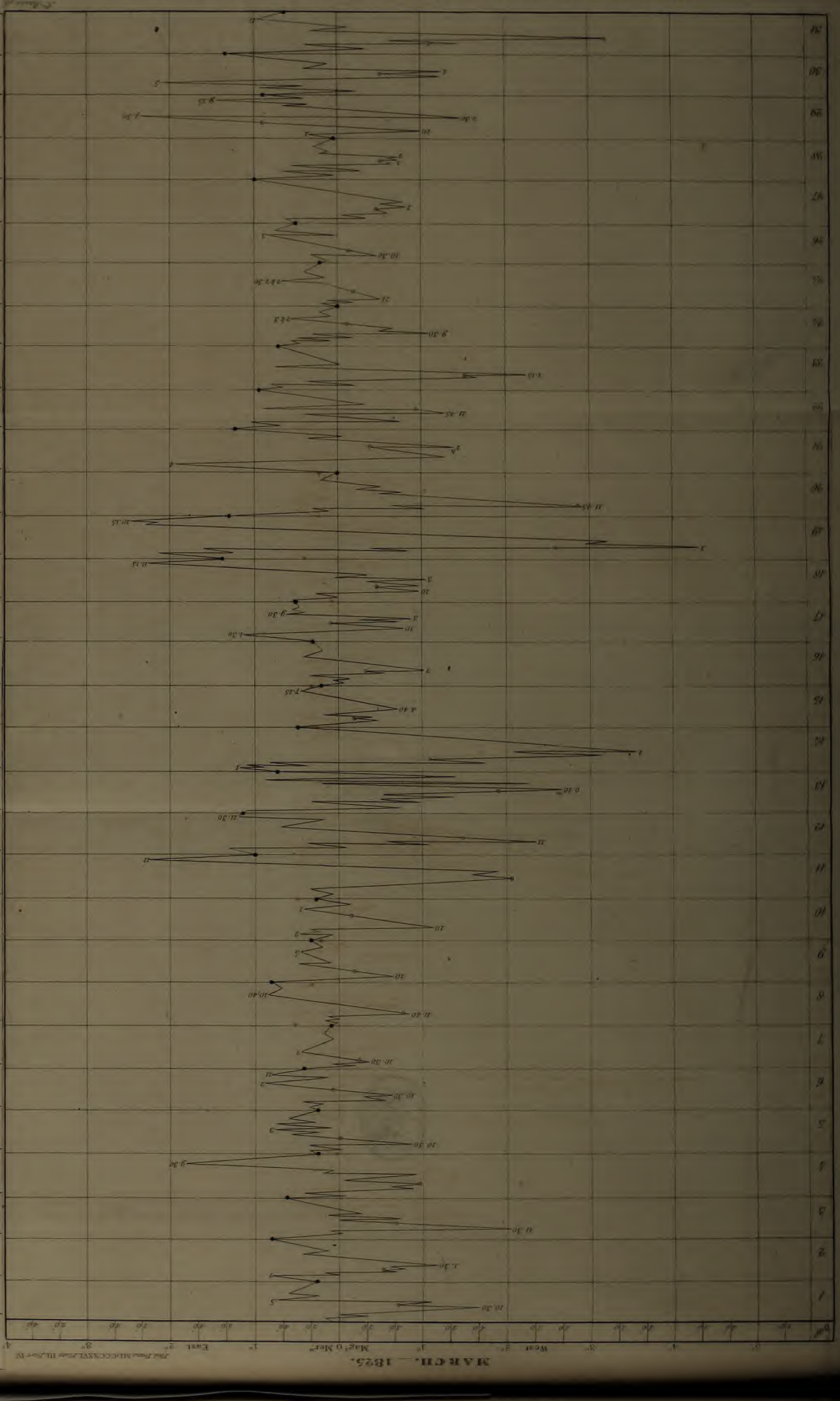



Note. *The dark circular spots indicate Midnight, the light ones, Noon; and the intervening figures, the intermediate hours.*

## Needle I.

| February 1825. | Sun's Zenith Distance. | | Moon on the South Meridian. | | Moon on the North Meridian. | |
|---|---|---|---|---|---|---|
| | On the S. Meridian. | On the N. Meridian. | Time of passing. | Zenith distance. | Time of passing. | Zenith distance. |
| | ° ′ | ° ′ | h. m. | ° ′ | h. m. | ° ′ |
| 1 | 90 15 | 123 38 | 10 45 P. M. | 54 43 | 10 18 A. M. | 86 06 |
| 2 | 89 58 | 123 21 | 11 43 P. M. | 59 01 | 11 14 A. M. | 90 06 |
| 3 | 89 40 | 123 04 | | | 0 11 P. M. | 95 13 |
| 4 | 89 22 | 122 45 | 0 38 A. M. | 64 39 | 1 05 P. M. | 101 13 |
| 5 | 89 04 | 122 27 | 1 32 A. M. | 70 48 | 1 59 P. M. | 107 31 |
| 6 | 88 46 | 122 08 | 2 25 A. M. | 77 08 | 2 51 P. M. | 113 40 |
| 7 | 88 27 | 121 49 | 3 17 A. M. | 83 04 | 3 43 P. M. | 119 04 |
| 8 | 88 08 | 121 30 | 4 10 A. M. | 88 13 | 4 37 P. M. | 124 00 |
| 9 | 87 49 | 121 11 | 5 05 A. M. | 92 24 | 5 32 P. M. | 127 34 |
| 10 | 87 30 | 120 52 | 6 00 A. M. | 95 21 | 6 27 P. M. | 129 50 |
| 11 | 87 10 | 120 32 | 6 54 A. M. | 96 53 | 7 21 P. M. | 130 39 |
| 12 | 86 49 | 120 12 | 7 48 A. M. | 97 01 | 8 14 P. M. | 130 06 |
| 13 | 86 29 | 119 52 | 8 41 A. M. | 95 49 | 9 06 P. M. | 128 20 |
| 14 | 86 09 | 119 31 | 9 31 A. M. | 93 30 | 9 55 P. M. | 125 31 |
| 15 | 85 48 | 119 10 | 10 19 A. M. | 90 13 | 10 42 P. M. | 121 50 |
| 16 | 85 27 | 118 49 | 11 04 A. M. | 86 15 | 11 26 P. M. | 117 35 |
| 17 | 85 06 | 118 28 | 11 46 A. M. | 81 48 | | |
| 18 | 84 45 | 118 07 | 0 28 P. M. | 76 58 | 0 06 A. M. | 112 56 |
| 19 | 84 24 | 117 46 | 1 08 P. M. | 72 05 | 0 48 A. M. | 107 44 |
| 20 | 84 03 | 117 25 | 1 49 P. M. | 67 24 | 1 28 A. M. | 103 10 |
| 21 | 83 41 | 117 03 | 2 30 P. M. | 62 36 | 2 09 A. M. | 98 48 |
| 22 | 83 19 | 116 41 | 3 13 P. M. | 58 19 | 2 51 A. M. | 93 53 |
| 23 | 82 57 | 116 19 | 3 58 P. M. | 54 44 | 3 36 A. M. | 90 01 |
| 24 | 82 35 | 115 57 | 4 48 P. M. | 51 53 | 4 22 A. M. | 86 45 |
| 25 | 82 13 | 115 35 | 5 40 P. M. | 50 04 | 5 13 A. M. | 84 24 |
| 26 | 81 51 | 115 12 | 6 34 P. M. | 49 29 | 6 07 A. M. | 83 08 |
| 27 | 81 28 | 114 49 | 7 31 P. M. | 50 21 | 7 02 A. M. | 83 16 |
| 28 | 81 05 | 114 26 | 8 28 P. M. | 52 41 | 8 00 A. M. | 84 52 |

| March 1825. | Sun's Zenith Distance. On the S. Meridian. | Sun's Zenith Distance. On the N. Meridian. | Moon on the South Meridian. Time of passing. | Moon on the South Meridian. Zenith distance. | Moon on the North Meridian. Time of passage. | Moon on the North Meridian. Zenith distance. |
|---|---|---|---|---|---|---|
| | ° ′ | ° ′ | h. m. | ° ′ | h. m. | ° ′ |
| 1 | 80 42 | 114 03 | 9 26 P. M. | 56 31 | 8 58 A. M. | 87 56 |
| 2 | 80 19 | 113 40 | 10 22 P. M. | 61 31 | 9 54 A. M. | 92 25 |
| 3 | 79 56 | 113 17 | 11 18 P. M. | 67 22 | 10 50 A. M. | 97 53 |
| 4 | 79 33 | 112 54 | | | 11 44 A. M. | 104 03 |
| 5 | 79 10 | 112 31 | 00 12 A. M. | 73 41 | 0 39 P. M. | 110 27 |
| 6 | 78 47 | 112 08 | 1 07 A. M. | 80 01 | 1 34 P. M. | 116 34 |
| 7 | 78 24 | 111 45 | 2 02 A. M. | 85 52 | 2 29 P. M. | 121 57 |
| 8 | 78 01 | 111 22 | 2 57 A. M. | 90 33 | 3 26 P. M. | 126 02 |
| 9 | 77 38 | 110 58 | 3 54 A. M. | 94 08 | 4 23 P. M. | 128 53 |
| 10 | 77 15 | 110 35 | 4 51 A. M. | 96 14 | 5 20 P. M. | 130 16 |
| 11 | 76 51 | 110 11 | 5 48 A. M. | 96 52 | 6 14 P. M. | 130 12 |
| 12 | 76 27 | 109 47 | 6 41 A. M. | 96 06 | 7 07 P. M. | 128 47 |
| 13 | 76 03 | 109 23 | 7 34 A. M. | 94 10 | 7 56 P. M. | 126 17 |
| 14 | 75 40 | 109 00 | 8 22 A. M. | 91 10 | 8 42 P. M. | 122 55 |
| 15 | 75 16 | 108 36 | 9 08 A. M. | 87 27 | 9 26 P. M. | 118 54 |
| 16 | 74 53 | 108 13 | 9 51 A. M. | 83 09 | 10 08 P. M. | 114 25 |
| 17 | 74 29 | 107 49 | 10 33 A. M. | 78 30 | 10 49 P. M. | 109 40 |
| 18 | 74 05 | 107 25 | 11 14 A. M. | 73 42 | 11 30 P. M. | 104 49 |
| 19 | 73 41 | 107 01 | 11 54 A. M. | 68 50 | | |
| 20 | 73 17 | 106 37 | 0 36 P. M. | 64 13 | 0 12 A. M. | 100 02 |
| 21 | 72 53 | 106 13 | 1 20 P. M. | 59 51 | 0 55 A. M. | 95 30 |
| 22 | 72 30 | 105 50 | 2 04 P. M. | 56 03 | 1 39 A. M. | 91 21 |
| 23 | 72 06 | 105 26 | 2 51 P. M. | 52 56 | 2 26 A. M. | 87 56 |
| 24 | 71 42 | 105 02 | 3 42 P. M. | 50 48 | 3 16 A. M. | 85 18 |
| 25 | 71 18 | 104 38 | 4 35 P. M. | 49 49 | 4 08 A. M. | 83 41 |
| 26 | 70 55 | 104 15 | 5 29 P. M. | 50 07 | 5 02 A. M. | 83 20 |
| 27 | 70 31 | 103 51 | 6 25 P. M. | 51 48 | 5 57 A. M. | 84 19 |
| 28 | 70 08 | 103 28 | 7 20 P. M. | 54 52 | 6 52 A. M. | 86 42 |
| 29 | 69 45 | 103 05 | 8 15 P. M. | 59 13 | 7 47 A. M. | 90 25 |
| 30 | 69 22 | 102 42 | 9 08 P. M. | 64 26 | 8 41 A. M. | 95 13 |
| 31 | 68 59 | 102 19 | 10 02 P. M. | 70 25 | 9 35 A. M. | 100 54 |




Note. The dark curves (thus) denote the Sun's, and the intervening figures, the corresponding hours.

BRITISH MUSEUM
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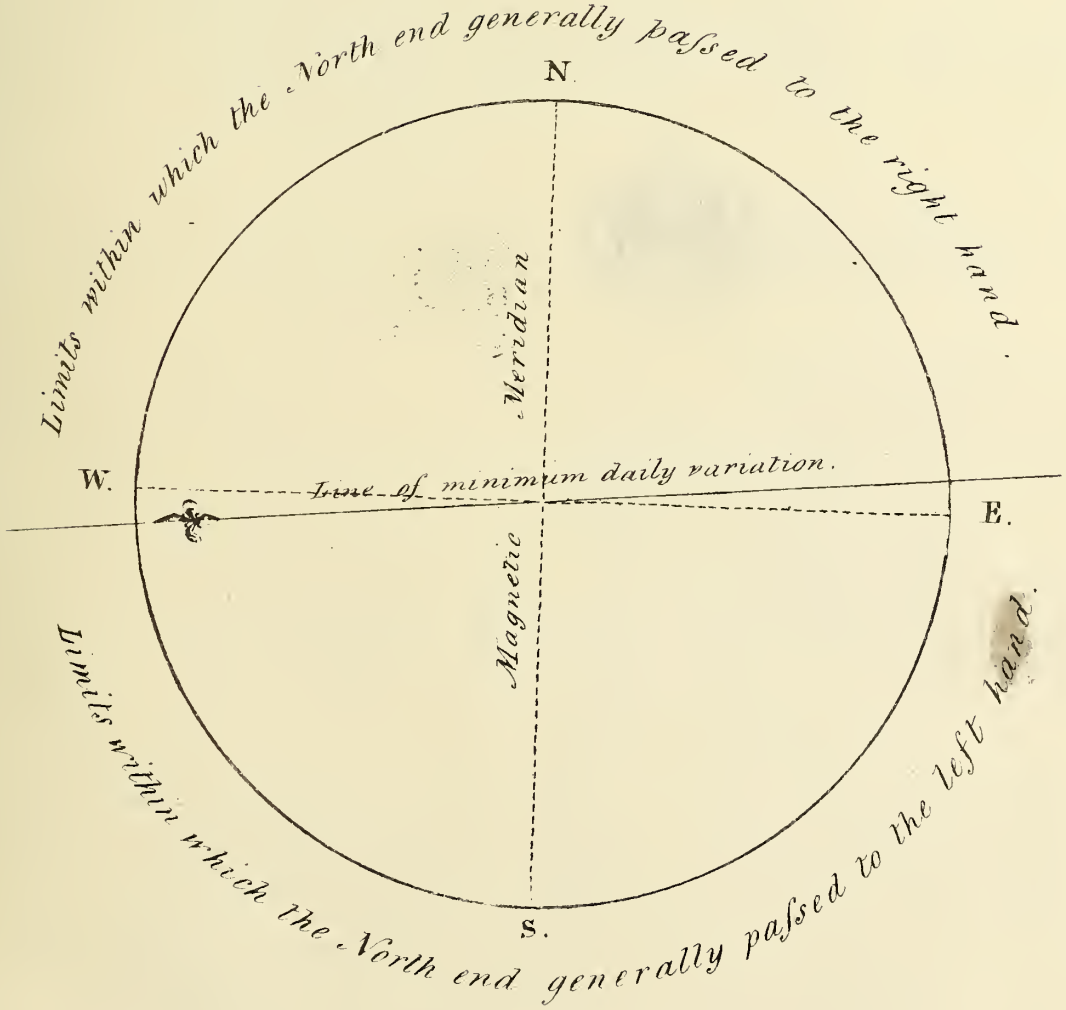
Limits within which the North end generally passed to the right hand.
N.
Meridian
W.
Line of minimum daily variation.
E.
Magnetic
S.
Limits within which the North end generally passed to the left hand.

BRITISH MUSEUM
NATURAL HISTORY.

TABLES shewing the Diurnal change in the Intensity of the Magnetic Horizontal Needle at Port Bowen, from February 15th to May 31st, 1825: the time specified in the different Columns being that, during which, the Needle performed 60 Vibrations at every Hour of the above interval.

| Days. | A. M. 1h | 2h | 3h | 4h | 5h | 6h | 7h | 8h | 9h | 10h | 11h | Noon. | P. M. 1h | 2h | 3h | 4h | 5h | 6h | 7h | 8h | 9h | 10h | 11h | Midnight. | Time of Minimum Intensity. | Time of Maximum Intensity. | Daily Change of Intensity. | Temperature of the Atmosphere. In. From. | In. To. | Out. From. | Out. To. | Moon's Age. | Moon's Right Ascension at Noon. | Moon's Declination at Noon. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1825. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | m. s. | h. m. | h. m. | s. | ° | ° | ° | ° | d | ° ′ | ° ′ | |
| Feb. 15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 18 05,2 | 18 01,5 | 17 51,8 | 17 49,0 | 17 47,2 | 17 50,3 | 17 51,3 | 17 52,5 | 17 52,3 | 17 50,5 | 17 50,3 | 17 49,3 | 17 52,0 | 17 53,7 | 11 24 A.M. | 9 57 P.M. | 24,2 | −23 | −29 | −31 | −33 | 29 | 304 33 | 16 43 S. | |
| 16 | 17 55,8 | ..... | 18 00,3 | 18 08,3 | 18 04,8 | 18 02,0 | 18 15,5 | 18 08,5 | 18 03,7 | 17 56,5 | 17 53,8 | 17 51,2 | 17 55,5 | 17 49,0 | 17 47,2 | 17 50,3 | 17 51,4 | 17 52,5 | 17 52,3 | 17 50,5 | 17 50,3 | 17 49,3 | 17 52,0 | 17 53,7 | 6 54 | 3 02 | 28,3 | 22 | 33 | 19 | 37 | 30 | 316 22 | 12 49 | |
| 17 | 17 52,5 | 17 55,3 | 18 00,8 | 17 57,2 | 17 56,4 | 17 59,5 | 18 05,9 | 18 00,0 | 17 54,3 | 17 52,0 | 17 50,5 | 17 51,7 | 17 50,8 | 17 47,2 | 17 49,3 | 17 51,4 | 17 50,0 | ..... | ..... | ..... | 17 47,3 | 17 50,0 | 17 52,5 | 17 53,2 | 5 01 | 13,8 | 17 | 22 | 16½ | 25 | 1 | 327 43 | 8 28 | |
| 18 | 17 55,9 | 17 57,3 | 17 56,8 | 17 58,8 | 18 04,2 | 18 04,3 | 18 02,0 | 17 59,3 | 18 00,0 | 17 52,2 | 17 49,6 | 17 49,2 | 17 54,2 | 17 50,2 | 17 53,9 | 17 54,2 | 17 53,2 | 17 56,0 | 17 54,8 | 17 54,2 | 6 3 | 10 30 A.M. | 24,7 | 21½ | 24 | 25 | 35 | 2 | 338 44 | 3 44 | ● New moon. |
| 19 | 18 01,5 | 18 00,0 | 18 00,0 | 18 12,0 | 18 04,1 | 17 59,8 | 18 00,7 | 18 03,6 | 18 03,7 | 17 56,5 | 18 02,5 | 17 56,5 | 17 55,2 | 17 54,2 | 17 55,5 | 17 54,5 | 17 51,3 | 17 55,6 | 17 53,2 | 17 56,7 | 17 54,5 | 17 54,5 | 4 00 | 3 58 P.M. | 23,0 | 22 | 26 | 28 | 36¼ | 3 | 349 35 | 0 52 N. | |
| 20 | 17 55,8 | 17 57,2 | 17 58,1 | 18 00,3 | ..... | 17 59,5 | 18 00,3 | 17 59,5 | 17 58,0 | 17 56,2 | 18 07,8 | 17 58,3 | 17 53,7 | 17 50,3 | 17 50,5 | 17 57,2 | 17 54,5 | 17 53,8 | 17 54,0 | 17 54,7 | 17 57,5 | 17 55,6 | 17 57,2 | 17 59,4 | 10 53 | 6 04 | 25,7 | 26 | 28 | 30 | 42½ | 4 | 0 26 | 5 40 | |
| 21 | 17 54,3 | 17 54,7 | 17 57,7 | 18 00,5 | 18 09,2 | 18 03,5 | 17 59,1 | 17 57,5 | 17 58,5 | 18 04,5 | 17 54,9 | 17 50,3 | 17 49,8 | 17 50,0 | 17 50,7 | 17 54,1 | 17 49,3 | 17 48,0 | 17 50,5 | 17 50,0 | 17 54,5 | 17 57,8 | 17 58,3 | 5 08 | 2 08 | 24,8 | 26 | 28 | 29 | 34 | 5 | 11 29 | 10 10 | |
| 22 | 17 56,5 | 18 00,0 | 17 58,3 | 17 56,4 | ..... | 18 05,5 | 18 01,0 | 18 09,0 | 18 04,5 | 18 14,8 | 17 54,9 | 17 50,3 | 17 51,5 | 17 50,0 | 17 56,0 | 17 54,0 | 17 55,9 | 17 52,2 | 17 55,2 | 17 54,7 | 17 52,7 | 17 55,7 | 17 54,0 | 17 53,2 | 10 10 | 2 08 | 24,8 | 26 | 28 | 29 | 34 | 6 | 22 54 | 14 39 | |
| 23 | 17 57,2 | 18 03,6 | 18 05,2 | 18 02,6 | 18 03,4 | 18 09,5 | 18 13,7 | 18 11,1 | 18 01,5 | 18 02,3 | 17 59,3 | 17 59,6 | 17 54,0 | 17 51,4 | 17 50,1 | 17 53,7 | 17 51,8 | 17 46,3 | 17 50,7 | 17 52,2 | 17 55,0 | 17 55,3 | 7 12 | 7 57 | 27,4 | 24 | 27 | 25 | 29 | 7 | 34 51 | 17 56 | |
| 24 | 17 56,5 | 17 58,0 | 17 56,3 | 17 56,2 | 17 58,5 | 18 00,6 | 18 01,5 | 18 02,7 | 17 55,8 | 17 52,8 | 17 49,4 | 18 02,4 | 17 52,3 | 17 51,5 | 17 53,3 | 17 53,0 | 17 55,2 | 17 55,2 | 17 55,4 | 17 55,2 | 17 55,6 | 17 54,1 | 17 54,9 | 17 55,2 | 7 59 | 11 06 A.M. | 13,3 | 24 | 26 | 27 | 30 | 8 | 47 26 | 20 50 | |
| 25 | 17 55,5 | 17 55,0 | 17 55,0 | 17 55,3 | 17 58,2 | 17 57,9 | 17 59,4 | 17 58,5 | 17 59,3 | 17 58,2 | 17 59,2 | 17 58,9 | 17 55,7 | 17 56,5 | 17 57,6 | 17 56,5 | 17 57,4 | 17 56,2 | 17 55,8 | 17 56,2 | 17 54,0 | 17 54,8 | 17 54,7 | 6 57 | 1 57 P.M. | 09,9 | 24½ | 27 | 28 | 32½ | 9 | 60 43 | 22 49 | |
| 26 | 17 55,0 | 17 55,8 | 17 55,4 | 17 56,0 | 18 00,2 | 17 58,1 | 18 00,5 | 18 02,2 | ..... | 17 57,3 | 17 57,0 | 17 55,5 | 17 55,7 | 17 57,6 | 17 56,5 | 17 57,4 | 17 56,2 | 17 56,6 | 17 56,9 | 18 00,0 | 18 01,5 | 18 01,3 | 18 01,5 | 17 58 | 1 10 A.M. | 07,2 | 14 | 25 | 8 | 27 | 10 | 74 39 | 23 41 | |
| 27 | 18 01,5 | 18 03,7 | 18 03,8 | 18 04,2 | 18 03,5 | 18 02,2 | 18 03,2 | 18 05,0 | 18 04,9 | 18 07,5 | 18 08,2 | 18 04,0 | 18 04,5 | 18 00,2 | 18 00,7 | 18 00,5 | 17 59,0 | 18 00,4 | 18 02,6 | 18 02,2 | 18 02,0 | 18 02,4 | 18 01,1 | 18 01,5 | 1 00 | 5 10 P.M. | 09,2 | 11 | 14 | 9 | 13½ | 11 | 89 05 | 23 16 | |
| 28 | 18 01,0 | 18 02,3 | 18 01,1 | 18 01,4 | 18 04,1 | 18 05,0 | 18 05,0 | 18 06,5 | 18 05,4 | 18 02,8 | 18 01,5 | 18 00,5 | 17 56,6 | 17 59,3 | 17 58,8 | 17 58,3 | 17 57,5 | 17 57,3 | 17 59,6 | 17 59,0 | 17 57,2 | 17 57,7 | 17 57,6 | 17 58,1 | 7 53 | 11 59 A.M. | 09,5 | 13 | 19 | 13 | 31½ | 12 | 103 47 | 21 28 | |
| March 1 | 17 59,5 | 18 00,0 | 17 59,3 | 18 00,0 | 18 01,4 | 18 03,3 | 18 04,8 | 18 08,2 | 18 11,0 | 18 07,8 | 18 9,5 | 17 50,5 | 17 52,0 | 17 53,2 | 17 52,8 | 17 54,3 | 17 55,2 | 17 56,0 | 17 56,6 | 17 57,8 | 17 54,5 | 17 55,0 | 17 54,0 | 17 55,5 | 9 05 | 11 59 A.M. | 20,5 | 24 | 27 | 45 | 22 | 13 | 118 30 | 18 18 | |
| 2 | 17 56,3 | 17 58,0 | 17 59,1 | 18 09,3 | 18 03,0 | 18 03,0 | 18 01,8 | 18 01,0 | 18 00,5 | 17 53,2 | 17 53,6 | 18 02,2 | 17 58,8 | 17 55,4 | 17 55,4 | 17 55,4 | 17 52,4 | 17 52,7 | 17 53,5 | 17 56,2 | 17 54,2 | 17 54,0 | 3 51 | 3 06 P.M. | 22,8 | 28 | 24½ | 47½ | 39 | 14 | 136 38 | 13 54 | |
| 3 | 17 57,0 | 17 59,6 | 18 01,3 | 18 08,5 | 17 57,4 | 17 55,5 | 17 56,3 | 17 57,1 | 18 01,2 | 18 12,3 | 18 14,5 | 17 43,2 | 17 46,7 | 17 49,4 | 17 46,7 | 17 40,8 | 17 48,5 | 17 53,6 | 17 52,8 | 17 54,4 | 17 52,7 | 17 53,5 | 17 56,2 | 17 54,2 | 5 12 | 33,7 | 29 | 25 | 41 | 25 | 15 | 147 22 | 8 34 | |
| 4 | 17 55,6 | 17 56,7 | 17 57,4 | 17 57,8 | 18 03,0 | 18 01,2 | 18 02,6 | 18 02,3 | 17 56,0 | 17 59,7 | 17 56,3 | 17 57,0 | 17 52,8 | 17 50,5 | 17 50,0 | 17 56,2 | 17 58,5 | 17 54,3 | 17 55,9 | 17 53,3 | 17 49,0 | 17 45,6 | 17 50,7 | 17 55,8 | 10 4 | 10 2 | 17,4 | 26 | 23 | 34 | 27½ | 16 | 161 28 | 2 37 | ○ 9h 21m. |
| 5 | 17 57,3 | 17 58,0 | 17 59,3 | 18 07,0 | 18 00,5 | 17 59,8 | 18 05,0 | 18 01,8 | 17 55,5 | 17 51,2 | 17 52,3 | 17 48,5 | 17 53,4 | 17 57,2 | 17 54,5 | 17 53,8 | 17 58,0 | 17 55,2 | 17 54,0 | 17 55,9 | 17 52,8 | 17 53,7 | 17 54,8 | 17 55,9 | 4 10 | 00 2 | 18,5 | 26 | 23 | 33 | 28 | 17 | 175 31 | 3 30 S. | |
| 6 | 17 57,3 | 17 56,8 | 18 06,0 | 18 09,5 | 18 04,0 | 18 09,2 | 18 02,0 | 18 03,9 | ..... | 18 01,0 | 18 01,5 | 17 49,5 | 17 50,0 | 17 54,7 | 17 54,9 | 17 54,5 | 17 52,5 | 17 51,8 | 17 52,3 | 17 52,7 | 17 56,5 | 17 56,7 | 17 54,5 | 17 56,3 | 4 06 | 00 6 | 20,0 | 26 | 22½ | 39½ | 22 | 18 | 189 37 | 9 22 | |
| 7 | 17 57,3 | 17 56,8 | 18 06,0 | 18 09,5 | 18 04,0 | 18 09,2 | 18 02,0 | 18 03,8 | 17 55,5 | 17 51,2 | 17 52,3 | 17 48,5 | 17 53,4 | 17 57,2 | 17 54,5 | 17 53,8 | 17 58,0 | 17 55,2 | 17 54,0 | 17 55,9 | 17 52,8 | 17 53,7 | 17 54,8 | 17 55,9 | 4 10 | 00 2 | 18,5 | 26 | 22½ | 39½ | 22 | 18 | 189 37 | 9 22 | |
| 8 | 17 57,3 | 17 56,8 | 18 06,0 | 18 09,5 | 18 04,0 | 18 09,2 | 18 02,0 | 18 03,9 | ..... | 18 01,0 | 18 01,5 | 17 49,5 | 17 50,0 | 17 54,7 | 17 54,9 | 17 54,5 | 17 52,5 | 17 51,8 | 17 52,3 | 17 52,7 | 17 56,5 | 17 56,7 | 17 54,5 | 17 56,3 | 4 06 | 2 7 | 9,9 | 27 | 24 | 39½ | 32½ | 19 | 203 54 | 14 33 | |
| 9 | 17 55,6 | 17 56,5 | 17 56,6 | 18 00,4 | 17 55,2 | 17 59,7 | 17 57,5 | 17 56,1 | 17 59,8 | 17 57,0 | 17 56,2 | 17 55,8 | 17 53,3 | 17 54,3 | 17 54,0 | 17 52,0 | 17 50,0 | 17 50,2 | 17 51,4 | 17 50,5 | 17 51,2 | 17 52,7 | 17 55,0 | 9 53 | 5 58 | 18,1 | 26 | 24 | 32 | 27 | 20 | 218 24 | 18 45 | |
| 10 | 17 57,1 | 17 56,6 | 17 58,8 | 17 56,1 | 17 59,0 | 18 00,7 | 17 57,6 | 17 57,5 | 18 00,8 | 17 55,8 | 17 54,2 | 17 53,7 | 17 51,0 | 17 53,1 | 17 55,7 | 17 56,2 | 17 56,3 | 17 56,8 | 17 57,0 | 17 56,2 | 17 54,8 | 17 57,0 | 17 56,2 | 7 51 | 5 00 | 15,5 | 26 | 24 | 31 | 26 | 21 | 233 03 | 21 42 | |
| 11 | 17 57,2 | 17 58,0 | 17 57,1 | 17 59,8 | 17 58,4 | 17 57,6 | 17 57,7 | 17 57,5 | 18 00,8 | 18 01,0 | 18 02,2 | 18 02,2 | 17 53,5 | 17 46,2 | 17 47,9 | 17 46,4 | 17 51,5 | 17 50,0 | 17 48,3 | 17 51,0 | 17 51,6 | 17 48,8 | 17 50,1 | 17 52,0 | 11 30 | 0 11 | 23,0 | 27 | 22 | 35 | 27½ | 22 | 247 40 | 23 18 | |
| 12 | 17 58,1 | 17 58,9 | 17 59,1 | 17 56,9 | 18 00,5 | 17 57,8 | 17 58,5 | 18 03,5 | 18 07,6 | 17 57,0 | 18 10,8 | 18 03,6 | 17 56,0 | 17 52,2 | 17 51,2 | 17 59,3 | 17 51,0 | 17 53,6 | 17 46,2 | 17 52,0 | 17 54,2 | 17 56,5 | 17 53,0 | 17 52,1 | 11 12 | 1 52 | 16,0 | 27 | 22 | 36 | 28½ | 23 | 262 00 | 23 32 | |
| 13 | 17 56,5 | 18 00,0 | 18 04,0 | 18 04,5 | 18 04,3 | 18 03,5 | 18 03,5 | 18 06,8 | 18 04,0 | 18 02,2 | 17 50,5 | 17 56,5 | 17 53,2 | 17 52,3 | 17 57,0 | 17 59,0 | 17 59,0 | 17 56,0 | 17 55,6 | 17 53,5 | 17 54,5 | 17 55,7 | 17 57,0 | 17 57,5 | 7 57 | 7 3 | 24,6 | 27 | 22 | 36 | 28½ | 24 | 276 20 | 22 30 | |
| 14 | 17 58,5 | 17 58,5 | 18 01,2 | 18 03,9 | 18 00,0 | 18 04,2 | 18 02,3 | 18 07,8 | 18 19,0 | 18 10,2 | 18 09,3 | 17 59,5 | 17 53,0 | 17 48,0 | 17 52,7 | 17 54,7 | 17 52,1 | 17 54,5 | 17 53,1 | 17 55,8 | 17 58,0 | 17 53,5 | 17 56,2 | 17 56,3 | 9 18 | 11 4 A.M. | 16,3 | 26 | 21 | 35 | 26½ | 25 | 289 03 | 20 24 | |
| 15 | 17 56,7 | 17 57,7 | 17 59,3 | 18 03,2 | 18 00,7 | 17 58,2 | 17 55,8 | 17 59,8 | 17 58,6 | 17 57,0 | 17 57,8 | 17 59,5 | 17 53,0 | 17 46,6 | 17 45,3 | 17 47,2 | 17 50,1 | 17 50,3 | 17 53,0 | 17 55,0 | 17 56,7 | 17 56,5 | 2 07 P.M. | 31,0 | 27 | 21 | 35 | 27½ | 26 | 302 35 | 17 24 | |
| 16 | 17 57,5 | 17 57,7 | 18 00,3 | 17 58,0 | 18 00,2 | 17 58,0 | 18 00,2 | 18 00,0 | 18 01,5 | 18 01,5 | 18 01,8 | 17 56,6 | 17 57,0 | 17 58,8 | 17 54,2 | 17 50,7 | 17 46,6 | 17 45,3 | 17 46,9 | 17 48,8 | 17 54,5 | 17 55,8 | 17 56,7 | 11 00 | 5 02 | 17,9 | 26 | 20⅛ | 33 | 21 | 27 | 313 29 | 13 42 | |
| 17 | 18 01,0 | 18 00,0 | 18 00,2 | 17 59,5 | 17 59,8 | 18 06,3 | 18 04,3 | 18 06,0 | 18 07,5 | 17 59,8 | 18 06,0 | 18 07,5 | 17 58,6 | 17 56,3 | 17 52,9 | 17 51,6 | 17 53,0 | 17 50,2 | 17 49,2 | 17 50,6 | 17 53,5 | 17 54,0 | 17 56,5 | 17 58,2 | 0 06 P.M. | 7 12 | 18,3 | 24 | 22 | 28 | 22 | 29 | 324 53 | 9 31 | |
| 18 | 17 56,4 | 17 57,2 | 17 57,0 | 17 58,1 | 17 59,4 | 17 59,7 | 17 54,0 | 17 57,8 | ..... | 18 03,3 | 18 03,2 | 17 56,2 | 18 00,5 | 17 55,5 | 17 48,6 | 17 50,4 | 17 54,9 | 17 52,5 | 17 52,3 | 17 55,7 | 17 54,8 | 17 54,2 | 17 49,5 | 17 53,7 | 10 00 A.M. | 3 10 | 14,7 | 23½ | 21 | 28 | 19 | 30 | 346 48 | 0 18 | |
| 19 | 17 59,0 | 18 01,4 | 18 04,0 | 18 07,0 | 18 03,6 | 17 58,2 | 18 00,0 | 17 58,4 | 17 45,1 | 17 49,5 | 17 48,6 | 17 42,7 | 17 53,0 | 17 54,5 | 17 45,0 | 17 41,7 | 17 45,7 | 17 36,1 | 17 30,8 | 17 42,1 | 17 51,3 | 17 56,5 | 17 57,4 | 17 58,8 | 6 56 | 5 20 | 2 00 | 32,1 | 21 | 18 | 26½ | 19 | 1 | 357 40 | 4 24 N. | ● 4h 23m. |
| 20 | ..... | ..... | ..... | ..... | 18 21,5 | 18 20,3 | 18 12,2 | 18 09,8 | 17 57,8 | 17 46,7 | 17 56,2 | 18 03,0 | 17 55,2 | 17 52,7 | 17 45,0 | 17 41,4 | 17 45,7 | 17 36,1 | 17 30,8 | 17 42,5 | 17 51,3 | 17 56,5 | 17 57,4 | 17 58,8 | 5 56 | 2 00 | 32,1 | 21 | 18 | 26½ | 19 | 2 | 8 41 | 8 56 | |
| 21 | 17 59,3 | 18 01,5 | 18 11,8 | 18 20,7 | 18 07,7 | 18 20,8 | 18 23,8 | 18 02,4 | 18 38,2 | 17 51,0 | 17 52,0 | 17 56,3 | 17 49,8 | 17 56,1 | 17 58,7 | 17 57,2 | 17 52,0 | 17 46,5 | 17 53,6 | 17 57,6 | 17 55,0 | 17 55,5 | 17 56,3 | 17 55,7 | 5 59 | 2 00 | 31,7 | 24 | 19 | 34 | 23½ | 3 | 20 02 | 13 10 | |
| 22 | 18 07,0 | 18 19,8 | 18 16,4 | 18 09,3 | 18 05,6 | 18 07,6 | 18 08,0 | 18 17,7 | ..... | 18 00,0 | 18 14,0 | 18 08,7 | 17 50,5 | 17 53,0 | 17 52,8 | 17 58,0 | 17 53,2 | 17 51,7 | 17 46,5 | 17 54,0 | 18 00,2 | 17 54,8 | 17 57,0 | 17 56,3 | 2 00 | 6 10 | 21,5 | 27 | 19⅛ | 37½ | 26 | 4 | 31 51 | 16 54 | |
| 23 | 18 02,2 | 18 12,0 | 18 03,6 | 18 00,0 | 18 04,5 | 18 02,0 | 18 02,2 | 18 1,5 | 18 10,8 | 18 10,5 | 18 09,7 | 18 03,0 | 17 52,8 | 17 53,9 | 17 56,5 | 17 58,4 | 17 55,6 | 17 50,5 | 18 02,8 | 17 56,7 | 18 00,2 | 17 58,5 | 17 59,0 | 17 59,0 | 2 00 | Noon. | 18,9 | 30 | 22 | 38 | 28 | 5 | 44 14 | 19 57 | |
| 24 | 18 08,0 | 18 2,5 | 18 04,1 | 18 05,8 | ..... | 17 54,7 | 18 02,0 | 18 00,2 | 18 00,7 | 18 04,9 | 17 56,0 | 17 49,1 | ..... | 17 55,7 | 17 57,0 | 17 59,5 | 17 54,7 | 17 52,2 | 17 55,0 | 17 50,5 | 17 53,2 | 17 58,9 | 18 1,4 | 18 01,1 | 1 00 | 5 00 P.M. | 13,7 | 29 | 20 | 39½ | 30 | 6 | 57 13 | 22 09 | |
| 25 | 18 08,0 | 17 55,8 | 17 57,5 | 17 59,5 | 17 59,5 | 18 00,8 | 17 58,3 | 17 59,3 | 18 00,0 | 17 58,3 | 17 59,3 | 17 56,9 | 17 56,2 | 17 54,9 | 17 55,7 | 17 56,7 | 17 54,3 | 17 56,9 | 17 56,2 | 17 57,0 | 17 57,5 | 17 56,3 | 17 57,8 | 17 58,3 | 1 07 | 1 07 | 15,3 | 26 | 22 | 30⅝ | 22 | 7 | 70 45 | 23 18 | |
| 26 | 17 57,7 | 17 58,2 | 17 59,7 | 17 59,4 | 18 02,0 | 18 03,2 | 18 03,7 | 18 05,0 | ..... | 18 07,5 | 17 59,0 | 17 58,8 | 17 52,2 | 17 52,3 | 17 57,6 | 17 58,0 | 17 53,3 | 17 54,5 | 17 57,4 | 17 56,7 | 17 58,2 | 17 57,2 | 17 59,5 | 17 59,8 | 10 04 | 1 07 | 15,3 | 26 | 22 | 30⅝ | 22 | 8 | 84 42 | 23 16 | |
| 27 | ..... | 18 01,0 | 18 03,0 | 18 04,2 | 17 58,9 | 18 00,0 | 17 59,3 | 17 57,3 | 18 05,5 | 18 04,7 | 18 04,2 | 18 03,7 | 17 55,2 | 17 53,7 | 17 55,5 | 17 56,5 | 17 57,0 | 17 57,7 | 17 57,8 | 17 58,4 | 17 55,3 | 17 56,0 | 17 58,3 | 17 59,0 | 9 04 | 1 58 | 11,8 | 22 | 17 | 25½ | 18 | 9 | 98 54 | 21 57 | ☽ 3h 10m. |
| 28 | 18 01,6 | 18 02,8 | 18 07,9 | 18 06,0 | 18 02,0 | 17 58,5 | 18 07,2 | 17 55,7 | 18 03,7 | 18 10,8 | 18 10,4 | 18 04,4 | 18 01,0 | 17 46,7 | 17 48,5 | 17 48,0 | 17 56,2 | 17 53,3 | 17 55,5 | 17 53,0 | 17 59,3 | 17 58,5 | 17 59,7 | 18 01,3 | 18 02,8 | 11 57 | 1 03 | 31,3 | 22 | 18⅛ | 28⅛ | 19 | 10 | 113 07 | 19 22 | |
| 29 | 17 59,3 | 18 00,5 | 18 02,3 | 18 03,5 | 18 03,3 | 17 57,5 | 18 04,7 | 18 08,0 | 17 57,5 | 17 51,2 | 18 14,3 | 18 18,0 | 18 11,3 | 17 57,2 | 17 57,0 | 17 59,5 | 17 58,1 | 17 53,7 | 17 54,1 | 17 58,4 | 17 55,2 | 17 57,7 | 17 58,5 | 17 58,8 | 11 01 | 11 01 A.M. | 44,5 | 25 | 16 | 32½ | 21 | 11 | 127 14 | 15 35 | |
| 30 | 18 00,3 | 18 09,3 | 18 14,8 | 18 31,2 | 18 24,2 | 18 11,5 | 18 10,3 | 18 13,5 | 18 11,4 | ..... | 18 10,3 | 17 46,7 | 17 54,0 | 17 58,8 | 17 53,7 | 17 58,5 | 17 58,2 | 17 56,5 | 17 49,2 | 17 54,1 | 17 58,4 | 17 55,2 | 17 57,2 | 17 58,3 | 6 00 | 6 00 P.M. | 22,3 | 27 | 21½ | 36½ | 24 | 12 | 141 21 | 10 48 | |
| 31 | 18 01,0 | 18 03,2 | 18 07,5 | 18 11,5 | 18 00,7 | 18 09,4 | 18 04,4 | 17 55,8 | 18 03,0 | 18 04,3 | 18 09,2 | 18 01,0 | 17 49,7 | 17 43,8 | 17 55,7 | 17 54,3 | 17 44,0 | 17 55,0 | 17 45,0 | 17 52,3 | 17 39,3 | 17 46,1 | 17 52,9 | 17 59,1 | 9 19 | 9 05 | 44,0 | 27½ | 20½ | 36 | 25 | 13 | 155 02 | 5 16 | |
| April 1 | 18 03,7 | 18 09,7 | 18 15,5 | 18 04,0 | 18 18,8 | 18 10,8 | 18 15,0 | 18 21,8 | 18 23,3 | 18 09,0 | 17 55,3 | 17 49,8 | 17 49,7 | 17 43,8 | 17 55,7 | 17 54,3 | 17 44,0 | 17 55,0 | 17 45,0 | 17 52,3 | 17 39,3 | 17 46,1 | 17 52,9 | 17 59,1 | 9 19 | 9 05 | 44,0 | 27½ | 20½ | 36 | 25 | 14 | 168 54 | 1 30 S. | |
| 2 | 18 05,8 | 18 04,7 | 18 04,5 | 18 08,8 | 17 57,3 | 17 53,5 | 18 13,2 | 18 17,5 | 18 00,7 | 17 57,5 | 17 56,0 | 17 53,8 | 17 46,0 | 17 47,4 | 17 53,6 | 17 56 | 17 53,5 | 17 55,8 | 17 54,7 | 17 58,3 | 17 53,7 | 17 56,5 | 17 57,0 | 17 58,0 | 8 06 | 1 06 | 31,5 | 28½ | 23 | 37 | 23 | 15 | 182 56 | 6 37 | ○ Full at 18h 23m. |
| 3 | 18 05,1 | 18 01,2 | 18 05,2 | 18 11,3 | 18 20,2 | 18 14,3 | 18 14,5 | 18 10,3 | ..... | 18 11,0 | 18 04,2 | 17 57,5 | 17 45,4 | 17 51,2 | 17 56,4 | 18 00,5 | 17 54,3 | 17 51,9 | 17 54,3 | 17 55,1 | 17 55,5 | 17 57,3 | 17 58,7 | 17 58,6 | 5 08 | 1 01 | 34,5 | 25 | 18½ | 30 | 18 | 16 | 197 17 | 12 10 | |
| 4 | 17 59,2 | 18 00,0 | 17 59,2 | 18 00,0 | 17 56,0 | 18 00,4 | 18 02,7 | 18 05,4 | 18 12,3 | 18 01,5 | 18 01,5 | 18 02,0 | 17 43,5 | 17 45,4 | 17 58,1 | 18 02,7 | 18 00,0 | 17 55,0 | 17 54,0 | 17 50,7 | 17 54,0 | 17 56,2 | 17 57,4 | 18 00,3 | 9 04 | 1 02 | 28,8 | 24 | 15 | 32½ | 18 | 17 | 212 00 | 16 53 | |
| 5 | 18 02,3 | 18 02,8 | 18 03,3 | 18 07,5 | 17 58,0 | 17 59,5 | 18 06,2 | 18 01,5 | 18 01,8 | 18 00,2 | 18 06,4 | 17 47,6 | 17 51,6 | 17 56,0 | 17 55,2 | 17 57,1 | 17 55,8 | 17 55,0 | 17 50,0 | 17 49,0 | 18 02,2 | 18 02,9 | 18 00,0 | 18 01,6 | 3 58 | Noon. | 19,9 | 24 | 16 | 35 | 22½ | 18 | 227 01 | 20 26 | |
| 6 | 18 06,8 | 18 06,2 | 18 09,3 | 17 54,4 | 18 03,0 | 18 07,8 | 18 09,7 | 18 15,5 | 18 11,8 | 18 09,2 | 18 02,6 | 18 09,0 | 17 56,1 | 17 59,0 | 18 00,4 | 18 01,7 | 18 01,8 | 17 56,0 | 17 56,7 | 17 55,7 | 18 03,3 | 18 00,3 | 18 00,0 | 18 02,5 | 7 59 | 4 00 A.M. | 21,1 | 26½ | 17 | 36½ | 22 | 19 | 242 09 | 22 36 | |
| 7 | 18 03,1 | 18 04,6 | 17 58,7 | 17 58,5 | 17 56,6 | 18 00,7 | 18 06,1 | 18 01,2 | 18 05,0 | 18 06,5 | 18 07,2 | 18 08 | 17 55,2 | 17 53,5 | 17 57,0 | 17 56,0 | 17 53,0 | 17 52,8 | 17 52,6 | 17 56,6 | 18 01,8 | 17 59,7 | 18 01,5 | 18 01,5 | 0 03 P.M. | 6 57 P.M. | 15,4 | 26 | 15½ | 32 | 20 | 20 | 257 04 | 23 20 | |
| 8 | 17 59,5 | 18 09,5 | 18 05,5 | 18 05,2 | 18 01,2 | 18 05,2 | 18 12,3 | 18 03,4 | 17 58,8 | 18 02,8 | 18 06,0 | 17 58,4 | 17 56,2 | 17 50,5 | 17 44,0 | 17 53,0 | 17 43,5 | 17 37,0 | 17 41,5 | 17 34,7 | 17 44,6 | 17 45,4 | 18 00,4 | 17 58,8 | 10 00 A.M. | 7 55 | 48,1 | 24 | 17½ | 29½ | 16 | 21 | 271 29 | 23 12 | |
| 9 | 18 04,0 | 18 07,3 | 18 08,2 | 18 07,5 | 18 12,0 | 18 08,0 | 18 08,2 | 18 07,5 | 18 09,7 | 18 09,2 | 18 16,1 | 18 09,7 | 17 58,5 | 17 53,9 | 17 47,8 | 17 41,4 | 17 41,5 | 17 55,0 | 17 43,0 | 17 50,2 | 17 47,2 | 17 54,4 | 17 55,4 | 17 56,5 | 10 58 | 3 55 | 34,7 | 21 | 16 | 25 | 13 | 22 | 285 12 | 20 51 | ☾ Last quarter. |
| 10 | 17 57,5 | 18 03,8 | 18 11,0 | 18 04,4 | 18 14,5 | 18 13,3 | 18 17,7 | 18 20,2 | 18 07,2 | 18 10,0 | 17 53,5 | 17 58,5 | 17 55,6 | 18 03,5 | 17 37,9 | 17 48,2 | 17 56,8 | 17 59,2 | 17 58,7 | 18 00,5 | ..... | ..... | ..... | 8 02 | 3 05 | 42,3 | 19 | 13 | 18½ | 8 | 23 | 298 07 | 18 03 | |
| 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 18 25,2 | 18 27,5 | 18 24,2 | 18 12,3 | 18 05,8 | 17 59,0 | 17 53,0 | 18 05,5 | 18 05,2 | 18 05,0 | 18 06,5 | 18 03,5 | 17 58,2 | 17 58,0 | 18 03,5 | 18 05,8 | 9 57 | 3 01 | 34,5 | 7 | + 1 | 7 | + 5 | 24 | 310 18 | 14 32 | |
| 12 | 18 19,5 | 18 10,5 | 18 16,0 | 18 18,5 | 18 16,9 | 18 15,2 | 18 17,4 | 18 20,3 | 18 16,5 | 18 19,6 | 18 08,7 | 18 08,2 | 18 08,4 | 17 58,6 | 17 55,6 | 17 54,0 | 17 59,5 | 17 56,5 | 17 58,5 | 17 58,3 | 18 02,5 | 18 05,6 | 18 02,5 | 18 03,3 | 7 56 | 3 56 | 34,5 | + 1½ | + 7 | −14 | + 1½ | 25 | 321 52 | 10 28 | |
| 13 | 18 14,0 | 18 14,5 | 18 16,7 | 18 18,5 | 18 22,8 | 18 21,5 | 18 24,8 | 18 28,5 | 18 25,8 | 18 23,1 | 18 21,2 | 18 11,8 | 18 08,4 | 17 58,6 | 17 55,6 | 17 54,0 | 17 59,5 | 17 56,5 | 17 58,5 | 17 58,3 | 18 02,5 | 18 05,6 | 18 02,5 | 18 03,3 | 8 00 | 8 00 | 37,6 | − 8 | − 3 | −15 | − 2 | 26 | 333 00 | 6 03 | |
| 14 | 18 14,0 | 18 20,8 | 18 22,8 | 18 05,7 | 18 22,7 | 18 14,5 | 18 08,8 | 18 06,0 | 18 02,7 | 18 18,5 | 17 56,0 | 18 05,0 | 17 57,0 | 18 02,0 | 17 48,0 | 17 48,2 | 17 40,5 | 17 26,8 | 17 35,7 | 17 25,2 | 17 44,0 | 17 50,7 | 18 00,0 | 18 06,0 | 2 56 | 8 00 | 37,6 | − 8 | − 4½ | −15 | − 4 | 27 | 343 54 | 1 26 | |
| 15 | 18 07,8 | 18 11,8 | 18 11,9 | 18 10,5 | 18 00,8 | 18 00,4 | 17 55,0 | 18 02,8 | 17 59,0 | 18 04,8 | 18 00,5 | 17 42,7 | 17 47,5 | 17 52,0 | 18 01,2 | 18 11,0 | 18 08,5 | 18 08,2 | 18 07,5 | 18 00,4 | 18 08,7 | 18 08,5 | 18 10,5 | 18 09,3 | 3 03 | 11 57 A.M. | 29,2 | −10 | − 4½ | −15 | − 4 | 28 | 354 45 | 3 14 N. | |
| 16 | 18 12,5 | 18 06,0 | 18 12,0 | 18 18,5 | 18 07,7 | 18 39,1 | 18 30,6 | 18 31,2 | 18 52,0 | 18 25,6 | 18 16,8 | 17 57,5 | 18 10,8 | ..... | ..... | ..... | ..... | 18 24,4 | 18 19,6 | 18 19,3 | 18 17,5 | 18 20,9 | 18 33,5 | 18 27,0 | 18 36,7 | 9 08 | 11 58 | 54,5 | −10 | + 3 | −16½ | + 9 | 29 | 5 45 | 7 47 | |
| 17 | 18 40,7 | 18 43,3 | 18 44,2 | 18 54,2 | 18 27,5 | 18 37,5 | 18 39,0 | 18 44,5 | 18 49,5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 18 53,7 | 18 29,5 | 18 29,2 | 18 32,0 | 18 23,5 | 18 20,6 | 18 46,0 | 4 05 | ..... | ..... | −6 | − 1½ | − 8 | + 2½ | | | | ● New at 21h 20m. |
| 18 | ..... | ..... | ..... | ..... | ..... | 18 53,7 | 18 29,5 | 18 29,2 | 18 32,0 | 18 23,5 | 18 20,0 | 18 46,0 |

## *Abstract of the Results given in the preceding Table of Intensities.*

THE following Table is an abstract of the preceding observations on the diurnal change of intensity of the horizontal magnetic needle, at Port Bowen, during the months of February, March, April, and May, in the year 1825.

The second, third, fourth, and fifth columns of this Table, have been formed by dividing the sum of the times of vibration at each hour, for every month, by the number of days, for the mean monthly intensity at each hour; and the last column is formed by dividing the sum of all the times, by the number of days, for a general mean result. In this, however, the observations made in May are not included, in consequence of the re-magnetising of the needle, as stated at the head of the Table of that month's observations.

*Monthly and general mean Intensities of the horizontal magnetic Needle for every hour.*

| Hour. | | February. | March. | April. | May. | General mean independent of May. |
|---|---|---|---|---|---|---|
| | | Mean time in performing 60 vib. | Mean time in performing 60 vib. | Mean time in performing 60 vib. | Mean time in performing 60 vib. | |
| | h. | seconds. | seconds. | seconds. | seconds. | seconds. |
| A. M. | 1 | 1076,8 | 1079,1 | 1098,9 | 916,4 | 1086,6 |
| | 2 | 1073,5 | 1083,1 | 1100,7 | | 1089,4 |
| | 3 | 1075,7 | 1082,1 | 1102,7 | 930,7 | 1089,1 |
| | 4 | 1080,7 | 1084,8 | 1102,7 | | 1091,1 |
| | 5 | 1082,5 | 1082,8 | 1101,7 | 923,2 | 1090,3 |
| | 6 | 1082,1 | 1082,4 | 1105,4 | | 1090,6 |
| | 7 | 1082,8 | 1082,9 | 1108,2 | 922,6 | 1092,6 |
| | 8 | 1082,9 | 1083,1 | 1109,1 | | 1093,4 |
| | 9 | 1080,9 | 1084,7 | 1108,1 | 927,5 | 1094,2 |
| | 10 | 1079,5 | 1081,7 | 1107,1 | | 1091,4 |
| | 11 | 1077,9 | 1081,9 | 1101,9 | 923,6 | 1089,0 |
| Noon | 12 | 1077,1 | 1077,4 | 1093,3 | | 1084,6 |
| P. M. | 1 | 1075,1 | 1062,6 | 1092,5 | 914,4 | 1081,1 |
| | 2 | 1072,7 | 1062,6 | 1106,6 | | 1084,5 |
| | 3 | 1077,9 | 1076,4 | 1110,2 | 905,2 | 1087,6 |
| | 4 | 1077,4 | 1073,6 | 1090,9 | | 1094,9 |
| | 5 | 1073,6 | 1073,4 | 1094,0 | 905,4 | 1081,7 |
| | 6 | 1073,5 | 1072,1 | 1090,7 | | 1086,2 |
| | 7 | 1074,2 | 1072,0 | 1089,2 | 904,4 | 1079,1 |
| | 8 | 1073,8 | 1074,0 | 1088,7 | | 1079,7 |
| | 9 | 1075,1 | 1074,5 | 1091,2 | 906,0 | 1080,8 |
| | 10 | 1073,8 | 1074,8 | 1092,1 | | 1081,3 |
| | 11 | 1075,1 | 1075,9 | 1093,3 | 911,6 | 1082,3 |
| Midnight | 12 | 1076,3 | 1077,1 | 1096,1 | | 1083,9 |

From the general mean of the above results, it appears, that the maximum intensity of the horizontal needle at Port Bowen, uniformly took place about $7^h$ P. M.; but the time of minimum intensity is not so well defined, although it seems to happen somewhat later in the morning.

## V. *Observations for determining the dip of the magnetic needle.*

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### *Dip of the magnetic needle observed at Woolwich, and at different stations within the Arctic Circle.*

In the following Table, is given a general abstract of the dip of the magnetic needle; and of the magnetic intensity, observed at different stations within the Arctic Circle, in the years 1824-25; and of those at Woolwich, both prior, and subsequent to the voyage.

The instruments employed in these observations, were those by Jones, and Dollond, already described in the Appendix to the two preceding voyages of discovery; but on this occasion, other needles were added, the whole being numbered as follows:

No. 1. A rectangular needle, $7\frac{3}{4}$ inches in length, constructed by Jones on Meyer's principle, having a light cylindrical arm at right angles to its axis, for screwing on a small brass sphere.

2. The same needle, with a sphere somewhat larger.

3. The same needle, with a still larger sphere.

4. A plain rectangular needle of the same length as the above.

5. A needle similar to No. 4, but used only for the intensity.

6. A conical needle, by Dollond, $11\frac{1}{2}$ inches in length, having a moveable axis, for shifting into four different positions; used with the instrument of his construction.

7. A plain rectangular needle, of the same length as No. 6, and used in the same instrument; but employed exclusively for the intensity.

It may not be unnecessary to state, that every precaution which suggested itself was taken to insure accuracy, and that the needles were vibrated after each observation, by means of a small piece of magnetised wire, that their axis might not be injured by raising them in the Y's off the agate planes.

Each of the registered observations on the dip, were deduced from five readings of the needle, in each of its different positions.

The observations for intensity, by means of the *time* in which the needles performed one hundred vibrations in the meridian, are deduced from the mean of four hundred vibrations, obtained with the face of the instrument on each side of the vertical, and the needles reversed on their axis, in the two positions.

| Date. | Time of Observation. | Latitude North. | Longitude West. | Observer. | Needle. | Temperature. Fah. Air. | Temperature. Fah. Instrt. | Dip of north end of Needle. | Mean Dip. | Intensity. Mean T. in perfors 100 vib. | Intensity. Ratio deduced | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. | ° | ° | | | ° | ° | ° ′ | ° ′ | | | |
| May 5th | 5 A. M. | | | F. | 2 | +48,7 | +60 | 70 55,94 | | sec. | | In Mr. Christie |
| 6 | Noon | | | F. | 4 | +59 | +68 | 70 6,46 | | | | garden on Woo |
| 7 | Noon | Woolwich | Common. | F. | 5 | ..... | +57 | ..... | 70 9,2 N | 364,67 | 1,00 | wich Common |
| 8 | $5^h$ $37^m$ P. M. | | | F. | 1 | +62½ | +65 | 69 25,2 | | | | |
| June 26 | $10^h$ A. M. to $4^h$ P. M. | 68 59 13 | 53 12 56 | F. | 4 | +41½ | +41½ | 83 2,6 | | | | On Boat Islar |
| 26 | $6^h$ to $10^h$ P. M. | ..... | ..... | P. | 4 | +42 | +42 | 82 59,85 | | | | one of the Wh |
| 27 | $8^h$ P. M. to midnight | ..... | ..... | F. | 1 | +44 | +45 | 82 55,9 | 82 53,66 | | | Fish Islands |
| 28 | $1^h$ to $4^h$ A. M. | ..... | ..... | F. | 2 | +44 | +44 | 82 36,3 | | | | Davis' Strait. |
| 27 | $2^h$ P. M. | ..... | ..... | F. | 5 | ..... | +44 | ..... | ..... | 340,35 | 1,148 | |
| July 25 | Noon | 70 56 0 | 60 52 0 | F. | 4 | +38 | +38 | 84 10,8 | | | | On the Ice |
| 25 | $1^h$ to $3^h$ P. M. | ..... | ..... | P. | 4 | +42 | +42½ | 84 6,57 | 84 8,68 | ..... | ..... | Davis' Strait. |
| Nov. 1 | $10^h$ A. M. to $2^h$ P. M. | 73 13 39 | 88 54 48 | F. | 4 | — 6 | — 6 | 87 42,46 | | | | |
| 2 | $10^h$ A. M. to $3^h$ P. M. | ..... | ..... | F. | 2 | +3,2 | + 3,2 | 87 51,7 | | | | |
| 3 | $10^h$ A. M. to $2^h\frac{1}{2}$ P. M. | ..... | ..... | F. | 1 | + 2 | + 2 | 87 57,7 | | | | |
| 5 | $10^h$ A. M. to $6^h$ P. M. | ..... | ..... | F. | 6 | +10 | +10 | 88 16,91 | | | | |
| 6 | $10^h$ A. M. to $6^h$ P. M. | ..... | ..... | F. | 6 | — 4½ | — 4 | 88 13,75 | | | | |
| 8 | $10^h$ $20^m$ A. M. | ..... | ..... | F. | 7 | ..... | —13½ | ..... | ° ′ 87 55,29 | 404,94 | 1,296 | |
| 9 & 10 | $10^h$ A. M. to $4^h$ P. M. | ..... | ..... | P. | 6 | + 7 | + 8 | 87 43,79 | | | | |
| 11 | $9^h$ A. M. to $2^h$ P. M. | ..... | ..... | P. | 4 | + 1 | + 8 | 87 51,62 | | | | At Port Bowe |
| 12 | $10^h$ A. M. till noon. | ..... | ..... | P. | 1 | —14 | — 8½ | 87 54,94 | | | | on the easte |
| 12 | $0^h$ $30^m$ to $2^h$ $30^m$ P. M. | ..... | ..... | P. | 2 | — 9 | — 7 | 87 52,75 | | | | side of Princ |
| 1825. 12 | $3^h$ to $5^h$ P. M. | ..... | ..... | P. | 3 | —10 | — 6 | 87 47,3 | | | | Regent's Inlet |
| Jan. 4 | $0^h$ $30^m$ to $4^h$ P. M. | ..... | ..... | P. | 4 | —27 | —25 | 88 00,17 | | | | |
| 5 | $1^h$ to $4^h$ P. M. | ..... | ..... | P. | 4 | —36½ | —31 | 87 55,99 | | | | The observ |
| 6 | $11^h$ A. M. to $2^h$ $30^m$ P. M. | ..... | ..... | F. | 4 | —30 | —22 | 88 10,96 | | | | tions in Nove |
| 7 | $10^h$ A. M. to $2^h$ P. M. | ..... | ..... | F. | 1 | —35 | —33 | 88 11,2 | 88 5,31 | | | ber were part |
| 7 | $2^h$ to $6^h$ P. M. | ..... | ..... | F. | 2 | —36 | —25 | 87 40,05 | | | | made by candl |
| 8 | $11^h$ A. M. to $3^h$ P. M. | ..... | ..... | F. | 6 | —33 | —29 | 88 29,49 | | | | light; those |
| 10 | $11^h$ $45^m$ A. M. | ..... | ..... | F. | 7 | ..... | —22 | ..... | ..... ..... | 404,69 | 1,298 | January whol |
| April 26 | $11^h$ $30^m$ A. M. to $3^h$ P. M. | ..... | ..... | F. | 4 | + 2 | — 1 | 88 16,99 | | | | by candlelig |
| 26 | $4^h$ to $7^h$ $30^m$ P. M. | ..... | ..... | F. | 2 | + 2 | + 1 | 88 12,76 | 88 13,2 | | | and those in |
| 27 | $6^h$ $15^m$ to $8^h$ $30^m$ A. M. | ..... | ..... | F. | 1 | — 3 | Zero | 88 9,32 | | | | April and Ju |
| June 2 | $9^h$ $20^m$ to $11^h$ $30^m$ A. M. | ..... | ..... | P. | 4 | +25 | +26 | 88 6,86 | | | | by daylight. |
| 2 | $11^h$ $40^m$ A.M. to $1^h$ $30^m$ P.M. | ..... | ..... | P. | 1 | +26 | +28 | 88 3,07 | 88 8,12 | | | |
| 2 | $1^h$ $50^m$ to $4^h$ P. M. | ..... | ..... | P. | 2 | +29 | +29 | 88 13,8 | | | | |
| 27 | $9^h$ $30^m$ A. M. to $3^h$ P. M. | ..... | ..... | F. | 6 | +47 | +48 | 87 36,77 | | | | |
| 28 | Noon to $2^h$ P. M. | .... ... | ..... | F. | 4 | +43 | +42 | 87 34,17 | | | | |
| 28 | $4^h$ to $6^h$ P. M. | ..... | ..... | F. | 1 | +43 | +42 | 87 52,5 | 87 44,41 | | | |
| 28 | $6^h$ $30^m$ to $9^h$ P. M. | ..... | ..... | F. | 2 | +40 | +41 | 87 54,2 | | | | |
| 27 | $9^h$ $30^m$ A. M. | ..... | ..... | F. | 7 | ..... | +47 | ..... | ..... | 406,50 | 1,286 | |
| July 27 | $10^h$ A. M. to $1^h$ $30^m$ P. M. | 73 6 17 | 91 19 52 | P. | 2 | +50 | +50 | 88 2,1 | 88 2,1 | ..... | ..... | On the easte |
| Aug. 13 | $8^h$ $45^m$ A. M. to noon. | 72 46 32 | 91 50 30 | F. | 4 | +42 | +47 | 88 25,44 | | | | coast of Nor |
| 13 | $0^h$ $20^m$ to $3^h$ $30^m$ P. M. | ..... | ..... | F. | 2 | +48 | +48 | 88 12,68 | 88 19,22 | ..... | ..... | Somerset. |
| 13 | $6^h$ $20^m$ to $7^h$ $35^m$ P. M. | ..... | ..... | F. | 1 | +42½ | +42 | 88 19,55 | | | | |
| 30 | $8^h$ to $11^h$ A. M. | 73 9 8 | 89 1 20 | F. | 4 | +33 | +33 | 88 8,25 | 88 8,25 | ..... | ..... | ..Neill's Harbou |
| Dec. 3 | $11^h$ $30^m$ A. M. | | | F. | 7 | ..... | +47½ | ..... | ..... | 461,02 | 1,00 | |
| 4 | $11^h$ $10^m$ A.M. to $2^h$ P.M. | | | F. | 4 | +47 | +47 | 70 10,1 | | | | In Mr. Christie |
| 4 | $2^h$ $50^m$ to $4^h$ $37^m$ P. M. | Woolwich | Common. | F. | 2 | +46 | +46 | 69 54,7 | 70 00,4 | ..... | ..... | garden on Woo |
| 5 | $1^h$ $30^m$ to $4^h$ $10^m$ P. M. | | | F. | 1 | +45 | +45 | 69 56,5 | | | | wich Common. |

Mean dip of the needle at Port Bowen = 88° 1′,23.

VI. *Observations on the diurnal changes in the position of the horizontal needle, under a reduced directive power, at Port Bowen*, 1825. *By Lieutenant* HENRY FOSTER, *R.N. F.R.S. Communicated January* 12, 1826.

THE daily variation of the horizontal needle is a subject which has, for nearly a century, attracted the attention of several accurate observers, whose object was principally limited to determining the hour of the day, when its amount was the greatest, and the times of the needle's successive easterly and westerly motions.

From these observations, however, it could not be ascertained whether the cause of this daily variation proceeded from an actual change in the direction of the magnetic axis of the earth, or whether it arose from some foreign force, acting transversely on the needle, impelling it out of its natural direction. To submit this question to the test of observation, Mr. BARLOW, in 1823, undertook a set of experiments on the daily variation of a horizontal needle nearly neutralized by the application of artificial magnets; under an idea, that if the daily variation proceeded from an actual change in the direction of the earth's magnetism, the needle in this case, as when in its natural state, would merely take up its new direction without any increase of amount; but if it proceeded from a foreign force acting transversely upon it, the needle now having less intensity of direction than when in its natural state, it would yield more easily to this transverse force and give a larger expression, which would

serve to mark with more precision than heretofore, all the circumstances of this daily change. On trial, the amount was found to be very considerably increased; and he, still in pursuit of the same object, now undertook to ascertain the direction which the daily variation impressed upon the needle, when balanced at different azimuths; which was easily done by a slight adjustment of the magnets; and in this way he found that in two positions of the needle, *viz.* when its north end was directed either to N 16° W, or S 16° E, no daily variation, or a very little took place, and that on one side of this line, the needle passed in one direction, and on the other side in an opposite one.

In the memoir which the Author published relative to these experiments, he expresses a wish that some other persons would pursue this enquiry; and as the parts in which we were likely to winter in the recent voyage of discovery under Captain PARRY, seemed highly favourable for the purpose, I determined to avail myself of this circumstance, and to make a regular set of such observations.

With respect to the daily variation, it was soon found, as was expected, that the needle being nearly neutralized by the great amount of dip, no artificial means would be necessary for increasing its amount: all the observations, therefore, on this head, were made with the needles suspended in their natural state, and the following are entirely devoted to the second object, *viz.* of determining the direction which the needle takes in consequence of the daily variation when directed to different points of the compass, and to ascertain the line of no daily variation, or at least that line in which the motion is a minimum.

Mr. CHRISTIE, in pursuing the experiments above referred to, and in those on the effects of temperature on magnets, had made use of an instrument admirably suited to such purpose; and he very obligingly superintended the construction of one somewhat similar for my use; a description and drawing of which he has given in his paper on the effects of temperature on magnets, published in the Phil. Trans. for 1825.

In these experiments, the apparatus was frozen to three firm stone supports, erected in a house built of snow, having the top covered with canvas; the zero on the compass-box was made to coincide with the direction of the needle at $6^h$ A.M., that being, although somewhat arbitrarily considered (from the mean of the preceding month's observations on the daily variation), the magnetic meridian. The needle used was made of clock spring, very delicate and light, in length 4,5 inches, its greatest breadth at the centre was 0,45 inches, and its extremities terminated in sharp points; the pivot on which it rested was also repolished previous to the commencement of the observations.

Having considerably reduced the directive power of this needle in its natural direction, by the action of two bar magnets, placed in the magnetic meridian, and in the same horizontal plane with it; I began on the 14th of February to register the amount of the daily change at stated intervals throughout the twenty-four hours, the Officers of the ship kindly assisting me, by taking the observations at the times of my attendance to other duties. The states of the two thermometers placed upon the instrument, were also noted at the time of every observation; and to preserve the intensity of the magnets from being affected by any sudden change

of temperature, produced by the approach of the observer, or other causes, they were thickly covered with snow after every adjustment.

During that part of the day when the needles suspended with floss silk indicated westerly variation, the direction of this needle is marked towards the *right hand*, when the *north end passes to the right hand of a person standing outside of the compass-box, and facing the north end of the needle;* and to the *left, when it passes towards the left hand.*

In the following details is given a short description of the adjustment of the magnets to the needle, at the commencement of the observations in each position of its north end; and also the time in which it performed one vibration when under their influence, as well as the ratios in which the directive force was reduced by them; but it must be remembered, that these ratios are mere approximations, since the directive force was always so much diminished, that a sufficient number of vibrations could not be counted, to estimate the duration of one with the required exactness. In the annexed tables every phenomena, such as halos, aurora borealis, winds, state of the weather, and position of the moon, are inserted; together with such remarks, as suggested themselves at the time of observation. There is also inserted in italics in the column of remarks; max. easterly and westerly variation, opposite the hours at which they respectively took place by the suspended needle No. 2, in order to define the time of the day when the motion of this needle was towards the right, or left hand, as above described. And to point out the times of maximum westerly and easterly deflections of this needle, the signs + and — are prefixed to the hours of observation when they respectively happened.

## North end of Needle to the North.

The magnets being placed to the north and south of the needle, with their axes coinciding with the magnetic meridian, the north magnet had its north pole, and the south magnet its south pole, directed towards the needle, at the distance of 31,5 inches from the centre of the compass-box. In this position of the magnets, the needle made one vibration in 15 seconds, so that the directive force was reduced in the ratio of 0,14 to 1 nearly.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenh. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h m. | | ° ′ | ° | | m. s. | | | |
| Feb. 14th | 0 30 | A. M. | N 3 20 E | —19 | ..... | ..... | Calm | Hazy | Aurora faint. |
| | 1 00 | | 4 50 | —19 | ..... | ..... | ..... | ..... | Aurora not vis. |
| | — 2 00 | | 5 00 | —19 | ..... | ..... | ..... | ..... | *Max. easterly variation.* |
| | 2 25 | | 5 00 | —19 | | | | | |
| | 6 35 | | 5 00 | —20 | ..... | ..... | N. Fresh | Ditto | |
| | 6 40 | | 4 30 | —20 | | | | | |
| | 6 45 | | 3 40 | —20 | | | | | |
| | 7 00 | | 1 30 | —20 | ..... | ..... | ..... | Cloudy to the eastward | |
| | 7 42 | | North | —20 | | | | | |
| | 7 52 | | N 3 00 W | —20 | | | | | |
| | 10 00 | | 4 30 | —20 | To the right hand. | ..... | N. Light | Clear and fine | |
| | 10 10 | | 5 30 | —20 | | | | | |
| | 11 00 | | 8 00 | —20 | | | | | |
| | 11 17 | | 8 20 | —20 | | | | | |
| | 11 32 | | 8 20 | —20 | | | | | |
| | 11 47 | | 8 40 | —20 | | | | | |
| | Noon | | 8 40 | —20 | | | | | |
| | 0 32 | P. M. | 9 00 | —20 | | | | | |
| | 0 35 | | 10 00 | —20 | ..... | ..... | NE Fresh | Squally | *Max. westerly variation.* |
| | 0 37 | | 10 30 | —20 | | | | | |
| | 0 40 | | 10 55 | —20 | | | | | |
| | + 0 42 | | 11 00 | —20 | | | | | |
| | 1 5 | | 11 00 | —20 | ..... | ..... | NNW | Moderate | |
| | 1 23 | | 11 00 | —21 | | | | | |
| | 2 00 | | 11 00 | —21 | | | | | |
| | 2 20 | | 11 00 | —21 | | | | | |
| | 2 32 | | 10 30 | —21 | | | | | |
| | 2 45 | | 10 00 | —21 | | | | | |
| | 8 10 | | 0 20 | —21 | | | | | |
| | 8 20 | | N 2 5 E | —21 | | | | | |
| | 9 33 | | 2 50 | —23 | | | | | |
| | 10 35 | | 8 50 | —22½ | | | | | |
| | 10 37 | | 10 20 | —22½ | | | | | |
| | 10 52 | | 10 40 | —23 | ..... | ..... | Ditto | Ditto | *Max. easterly variation.* |
| | 11 2 | | 10 10 | —23 | | | | | |
| | 11 30 | | 10 10 | —23 | | | | | |
| | 11 52 | | 10 00 | —23 | | | | | |

## North End of Needle to the North.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 15th | 0 22 | A. M. | N 10 00 E | —24 | ..... | ..... | NNW | Hazy | |
| | 1 00 | | 10 00 | —26 | ..... | ..... | Squally | | |
| | 1 50 | | 10 00 | —26 | | | | | |
| | 2 00 | | 12 5 | —26 | | | | | |
| | 2 10 | | 13 20 | —26 | | | | | |
| — | 2 16 | | 13 30 | —26 | | | | | |
| | 2 30 | | 13 30 | —26 | | | | | |
| | 6 55 | | North | —24 | ..... | ..... | NNW | Hazy | |
| | 7 00 | | N 3 00 W | —24 | | | Fresh | | |
| | 7 5 | | 6 00 | —24 | ..... | ..... | North | | |
| | 7 10 | | 8 20 | —24 | | | | | |
| | 7 12 | | 11 00 | —24 | | | | | |
| + | 7 15 | | 12 00 | —24 | | | | | |
| | 10 7 | | 10 50 | —24 | To the right hand. | | | | |
| | 10 35 | | 10 30 | —24 | | | | | |
| | 11 00 | | 10 00 | —24 | .. .. | 18 5,2 | | | |
| | 11 10 | | 9 30 | —24 | | | | | |
| | 11 30 | | 9 30 | —24 | | | | | |
| | 11 50 | | 9 30 | —24 | | | | | |
| | 11 55 | | 10 00 | —24 | .. .. | 18 1,5 | | | |
| | 0 10 | P. M. | 10 00 | —23 | | | | | |
| | 0 30 | | 10 20 | —23 | | | | | |
| | 1 00 | | 10 20 | —23 | ..... | 17 51,8 | ..... | ..... | *Max. westerly variation.* |
| | 1 10 | | 10 20 | —23 | | | | | |
| | 1 30 | | 10 30 | —23 | ..... | ..... | | | |
| | 1 57 | | 10 00 | —25 | | | | | |
| | 2 10 | | 9 30 | —25 | | | | | |
| | 2 35 | | 9 00 | —26 | | | | | |
| | 3 00 | | 8 30 | —26 | ..... | 17 50,5 | | | |
| | 7 50 | | 4 00 | —26 | | | | | |
| | 8 00 | | 2 30 | —25 | ..... | 17 43,7 | | | |
| | 9 00 | | 1 40 | —25 | ..... | 18 00,7 | | | |
| | 9 2 | | N 0 30 E | —25 | | | | | |
| | 9 37 | | 2 20 | —25 | ..... | ..... | Easterly | | |
| | 10 17 | | 2 30 | —25 | ..... | 17 41 | Light | | |
| | 11 36 | | 3 10 | —25 | ..... | 17 46,8 | | | |
| | Midnᵗ | | 3 30 | —25 | | | | | |
| Feb. 16th | 0 45 | A. M. | 11 00 | —25 | ..... | ..... | Ditto | Fine clear | |
| | 0 50 | | 11 40 | —25 | | | | | |
| | 0 57 | | 12 15 | —25 | | | | | |
| | 1 00 | | 13 5 | —25 | ..... | 17 55,8 | | | |
| | 1 3 | | 13 30 | —25 | | | | | |
| | 1 7 | | 13 40 | —25 | | | | | |
| — | 1 10 | | 13 50 | —25 | ..... | ..... | ..... | ..... | *Max. easterly variation.* |
| | 1 25 | | 13 00 | —25 | | | | | |
| | 1 30 | | 12 00 | —25 | | | | | |

The north end of the needle was now directed to the south; but as observations were afterwards made with the north end of the needle to the north, they are given in this place, to preserve uniformity in the arrangement.

## North end of Needle to the North.

At this time the magnets placed north and south of the needle, had their axes inclined to the magnetic meridian at an angle of 22 degrees, and the distance of their nearest ends from the centre of the needle was 32,95 inches. The time in which the needle now performed one vibration, was 10,24 seconds, and the directive force reduced in the ratio of 0,325 to 1.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Apr. 15th | 1 20 | A. M. | N 2 30 E | —10 | ..... | 18 7,8 | NE by N | Squally hazy low down | |
| | 1 30 | | 2 40 | —10 | | | | | |
| | 1 50 | | 2 40 | —10 | | | | | |
| | 2 15 | | 2 00 | —10 | ..... | 18 11,8 | | | |
| | 3 00 | | N 0 30 W | —10½ | ..... | 18 11,9 | | | |
| | 4 00 | | 1 20 | —11 | ..... | 18 10,5 | | | |
| | 5 10 | | 4 00 | —11 | .. To the right hand. .. | 18 0,8 | | | |
| | 6 00 | | 4 30 | —12 | .. .. | 18 0,4 | | | |
| | 6 50 | | 8 20 | —12 | | | | | |
| | 6 51 | | 8 30 | —12 | .. .. | 17 55 | | | |
| | 8 00 | | 9 30 | —11 | .. .. | 18 2,8 | | | |
| | 9 4 | | 9 30 | —11 | .. .. | 17 59 | | | |
| | 10 5 | | 9 50 | — 9 | .... .. | 18 4,8 | | | |
| | 11 00 | | 10 20 | — 7 | .... .. | 18 0,5 | ..... | ..... | *Max. westerly var.* |
| | +Noon | | 10 40 | — 7 | .. .. | 17 42,7 | NE mod. | Hazy with drift | This needle was frequently observed to vibrate in very small arcs, as it proceeded to the eastward from its *Max. westerly* position; as well as in its progress again to the westward, from 2ʰ to 6ʰ P. M. It is also worthy of remark that during the same interval, the intensity of the horizontal needle was observed to be very changeable, and the action of the suspended needles very irregular. |
| | 0 30 | P. M. | 8 00 | — 5 | .. .. | ..... | | | |
| | 1 00 | | 6 30 | — 5 | .. .. | 17 47,5 | | | |
| | 1 30 | | 6 30 | — 5 | | | | | |
| | — 2 00 | | 2 10 | — 5 | .. .. | 17 52 | | | |
| | 2 30 | | 2 10 | — 5 | Oscillatory. | | | | |
| | 2 45 | | 5 00 | — 5 | | | | | |
| | 3 00 | | 5 10 | — 5 | .. .. | 18 1,2 | *Max. easterly var.* | | |
| | 4 30 | | 9 00 | — 6 | .. .. | 18 11 | Squally | | |
| | 5 5 | | 9 50 | — 7 | .. .. | 18 8,5 | with drift | | |
| | + 5 55 | | 10 20 | — 8 | .. .. | 18 8,2 | | | |
| | 6 55 | | 9 10 | — 8 | | | | | |
| | 6 57 | | 8 40 | — 8 | ..... | 18 7,5 | | | |
| | 7 52 | | 8 25 | — 9 | ..... | 18 0,4 | Lt. breeze | | |
| | 9 7 | | 8 00 | — 9 | ..... | 18 8,7 | from N. | | |
| | 10 5 | | 7 20 | —10 | ..... | 18 8,5 | | | |
| | —11 4 | | 6 50 | —10 | ..... | 18 10,5 | ..... | Fine wea. | |
| | Midnᵗ | | 6 50 | —10 | ..... | 18 9,3 | Easterly | Clear and | |
| Apr. 16th | 5 10 | A. M. | N 8 50 W | —11 | .. .. | 18 7,7 | light | fine | *Max. westerly var.* happenᵈ at 2ʰ A.M. |
| | 6 00 | | 5 40 | —10 | .. .. | 18 39,1 | | | |
| | 6 20 | | 7 30 | — 9 | To the right hand. | | | | |
| | 7 00 | | 10 10 | — 8½ | .. .. | 18 30,6 | | | |
| | 8 00 | | 10 40 | — 6½ | .. .. | 18 31,2 | | | |
| | 9 15 | | 10 25 | — 2 | .. .. | 18 52 | | | |
| | 10 10 | | 12 00 | — 1 | .. .. | 18 25,6 | | | |
| | +10 15 | | 12 5 | — 1 | .. .. | | | | |
| | 10 30 | | 12 5 | — 1 | | | | | |
| | 11 10 | | 9 30 | + 1 | ..... | 18 16,8 | | | |
| | 11 32 | | 9 20 | + 1 | | | | | |
| | 0 58 | P. M. | 7 40 | + 2 | ..... | 17 57,5 | | | |
| | 1 25 | | 7 10 | + 4 | ..... | 18 10,8 | | | |
| | 1 30 | | 6 30 | + 4 | | | | | |
| | 1 57 | | 6 10 | + 4½ | | | | | |
| | 3 00 | | 3 20 | + 5 | | | | | |
| | 4 00 | | 3 30 | + 5 | | | | | |
| | 5 15 | | 7 10 | + 3½ | ..... | 18 24,4 | | | |

## North end of Needle to the North.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. / Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Apr. 16th | 6 00 | P. M. | N 7 10 W | + 2½ | ..... | 18 19,6 | | | |
| | 7 00 | | 7 10 | Zero | ..... | 18 19,3 | | | |
| | 8 00 | | 6 50 | — 1 | ..... | 18 17,5 | | | |
| | 9 00 | | 5 40 | — 3 | ..... | 18 20,9 | Calm | Clear and fine | |
| | 9 30 | | 5 30 | — 4 | | | | | |
| | 10 10 | | 5 30 | — 4 | ..... | 18 33,5 | | | |
| | 10 30 | | 5 30 | — 4½ | | | | | |
| | 11 10 | | 3 5 | — 4½ | ..... | 18 37 | | | |
| | —11 55 | | 3 00 | — 5 | ..... | 18 36,7 | ..... | ..... | *Max. easterly variation.* |
| Apr. 17th | 1 5 | A. M. | 3 30 | — 6 | ..... | 18 40,7 | | | |
| | 2 7 | | 4 10 | — 6 | ..... | 18 43,3 | | | |
| | 2 52 | | 4 30 | — 7 | ..... | 18 44,2 | | | |
| | 3 10 | | 5 20 | — 7 | | | | | |
| | 4 5 | | 7 30 | — 7 | ..... | 18 54,2 | | | |
| | 5 0 | | 8 20 | — 7 | ..... | 18 27,5 | | | |
| | 5 30 | | 6 20 | — 6 | | | | | |
| | 6 00 | | 7 30 | — 6 | .. To the right hand. .. | 18 37,5 | | | |
| | 6 30 | | 8 00 | — 5 | .. .. | ..... | Easterly light | | |
| | 7 00 | | 8 30 | — 5 | .. .. | 18 39 | | | |
| | 7 30 | | 8 40 | — 5 | .. .. | 18 44,5 | | | |
| | 9 00 | | 8 40 | + 0½ | .. .. | 18 49,5 | | | |
| | 9 40 | | 11 30 | + 2 | | | | | |
| | 10 00 | | 12 30 | + 3 | | | | | |
| | 10 30 | | 13 30 | + 3½ | | | | | |
| | 11 00 | | 13 30 | + 4 | | | | | |
| | 11 30 | | 15 20 | + 6 | | | | | |
| | +Noon | | 17 30 | + 6½ | ..... | ..... | ..... | ..... | *Max. westerly variation.* |
| | 1 5 | P. M. | 12 50 | + 7 | | | | | |
| | 1 30 | | 8 00 | + 7 | | | | | |
| | 2 2 | | 5 00 | + 6 | | | | | |
| | 9 30 | | 7 00 | — 3½ | ..... | 18 32,0 | | | |
| | 10 00 | | 6 10 | — 3 | ..... | 18 23,5 | | | |
| | 10 30 | | 6 00 | — 4 | | | | | |
| | 11 00 | | 5 40 | — 5 | ..... | 18 20,0 | | | |
| | 11 30 | | 4 30 | — 5 | | | | | |
| | Midnᵗ | | North | — 5 | ..... | 18 46,0 | Calm | Clear fine weather. | *Max. easterly variation.* |

## North end of Needle to the South.

In this case, the adjustment of the magnets was the same as in the preceding observations on the 14th of February, with this exception, viz. that their ends nearest to the needle were 27 inches from the centre of the compass-box; the needle under these circumstances making 1 vibration in 14 seconds, and the directive force reduced in the ratio of 0,154 to 1.

| Date. | Mean Time of Observation. | A. M. or P. M, | Reading of north end of Needle. | Temp. Fahrent. / Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 17th | 0 20 | A. M. | S 5 20 E | —22 | ..... | ..... | NNW Light | Hazy weather | |
| | 0 45 | | 5 40 | —22 | | | | | |
| | — 1 00 | | 5 40 | —22 | ..... | 17 52,5 | ..... | ..... | *Max. easterly variation.* |
| | 4 40 | | 5 40 | —22 | ..... | 17 56,4 | | | |
| | 5 50 | | 5 40 | —23½ | | | | | |
| | 6 15 | | 5 40 | —23 | ..... | 17 59,5 | | | |
| | 7 40 | | 5 40 | —22 | ..... | 17 55 | | | |
| | 9 00 | | 5 40 | —22 | ..... | 17 54,3 | | | |
| | 9 37 | | 5 30 | —21½ | ..... | ..... | Calm | Hazy | |
| | 10 7 | | 5 30 | —21½ | ..... | 17 52 | | weather | |
| | 10 30 | | 5 30 | —21 | | | | | |
| | 11 10 | | 5 30 | —21 | | | | | |
| | 11 20 | | 5 20 | —21½ | .. .. | 17 50,5 | | | |
| | Noon. | | 3 40 | —21½ | .. .. | 18 1 | North | | |
| | 0 45 | P M. | 3 20 | —21 | .. .. | 17 57,8 | Light | | |
| | 1 20 | | 3 00 | —21 | | | | | |
| | 1 30 | | 2 00 | —21 | | | | | |
| | 1 40 | | 0 50 | —21 | | | | | |
| | 1 45 | | 0 40 | —20 | To the left hand. | | | | |
| | 2 00 | | 0 20 | —20 | ..... | 17 51,7 | ..... | ..... | *Max. westerly variation.* |
| | 2 12 | | South | —20 | | | | | |
| | 2 30 | | S 0 20 W | —20 | | | | | |
| | 2 45 | | 0 40 | —20 | .. ..... | ..... | ..... | Hazy to | |
| | + 3 00 | | 1 00 | —20 | ..... | 17 50,8 | North Fresh | the eastward | |
| | 3 5 | | 1 00 | —20 | ..... | ..... | ..... | Clear over | |
| | 3 20 | | 1 00 | —20 | | | | head and | |
| | 4 12 | | 0 50 | —20 | ..... | 17 47,2 | | to the | |
| | 6 00 | | 0 40 | —21 | ..... | 17 51,4 | | westward | |
| | 7 35 | | 0 40 | —21½ | ..... | 17 50 | | | |
| | 8 10 | | S 1 40 E | —22 | ..... | ..... | ..... | ..... | Aurora faint to the N. E. by compass. |
| | 8 30 | | 2 30 | —21½ | ..... | ..... | ..... | Hazy | |
| | 9 00 | | 2 50 | —21½ | | | | | |
| | 9 30 | | 3 00 | —22 | | | | | Aurora not visible at 8.30. |
| | 9 50 | | 4 10 | —22 | | | | | |
| | 10 00 | | 6 00 | —22 | ..... | 17 47,3 | | | |
| | 10 10 | | 6 20 | —22 | | | | | |
| | 10 30 | | 6 20 | —22 | | | | | |
| | 11 00 | | 6 20 | —22 | ..... | 17 50 | | | |
| | 11 30 | | 6 40 | —22 | | | | | |
| | Midnt | | 6 40 | —22 | ..... | 17 52,5 | | | |

## North end of Needle to the South.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 18th | 0 15 | A. M. | S 6 40 E | —22 | ..... | ..... | NNE | Clear | |
| | 0 18 | | 7 10 | —22 | | | Light | | |
| | 0 30 | | 8 20 | —22 | | | | | |
| | 0 40 | | 8 40 | —22 | | | | | |
| | 0 15 | | 9 20 | —22 | | | | | |
| | 0 55 | | 9 50 | —22 | ..... | ..... | NNE | Clear | |
| | 1 00 | | 10 00 | —22 | ..... | 17 55,9 | Light | ..... | *Max. easterly variation.* |
| | 1 5 | | 10 15 | —22 | | | | | |
| | 1 15 | | 10 30 | —22 | | | | | |
| | —1 25 | | 10 50 | —22 | | | | | |
| | 1 35 | | 10 40 | —22 | | | | | |
| | 1 55 | | 10 30 | —22 | ..... | 17 57,3 | | | |
| | 2 30 | | 10 30 | —22 | | | | | |
| | 3 00 | | 10 00 | —21½ | ..... | 17 56,8 | | | |
| | 3 30 | | 9 40 | —22 | | | | | |
| | 3 56 | | 9 40 | —22 | ..... | 17 58,8 | | | |
| | 5 00 | | 9 40 | —22 | ..... | 18 4,2 | | | |
| | 6 2 | | 8 40 | —22 | ..... | 18 4,3 | | | |
| | 7 12 | | 8 40 | —22 | .. .. | 18 2,0 | | | |
| | 8 8 | | 8 35 | —23 | .. .. | 17 59,3 | | | |
| | 9 30 | | 7 50 | —23 | .. .. | 18 00,0 | NE Light | Fine and | |
| | 10 00 | | 7 00 | —23 | .. .. | 17 52,2 | | Clear | |
| | 10 35 | | 6 10 | —23 | | | | | |
| | 11 5 | | 5 30 | —23 | .. .. | 17 49,6 | | | |
| | 11 30 | | 5 20 | —23 | | | | | |
| | Noon. | | 5 10 | —23 | ..... | 17 49,2 | | | |
| | + 0 30 | P. M. | 5 00 | —23 | ..... | ... .... | ..... | ..... | *Max. westerly variation.* |
| | 1 00 | | 5 10 | —23 | ..... | 17 50,5 | | | |
| | 1 30 | | 5 10 | —23 | | | | | |
| | 2 00 | | 5 10 | —23 | ..... | 17 52,5 | | | |
| | 2 30 | | 5 10 | —23 | ..... | | | | |
| | — 3 00 | | 5 20 | —23 | ..... | 17 54,5 | | | |
| | 8 50 | | 5 10 | —24½ | ..... | ..... | Calm | Hazy, low to the westᵈ | |
| | 9 30 | | 5 10 | —25 | ..... | 17 53,2 | | | |
| | 10 00 | | 5 10 | —25 | ..... | 17 56 | ..... | ..... | Needle nearly |
| | 10 30 | | 5 10 | —24 | ..... | ..... | Northerly | Clear and | stationary, |
| | 11 00 | | 5 00 | —25½ | ..... | 17 54,8 | Light | fine | from $0^h\ 30^m$ P. M. until |
| | 11 30 | | 5 00 | —25 | | | | | $0^h\ 30^m$ A. M. |
| | Midᵗ. | | 5 00 | —25 | ..... | 17 54,2 | | | on the 19th. |
| Feb. 19th | 0 30 | A. M | 5 00 | —25 | ..... | 18 | NNE Lt. | Fine wea. | |
| | 1 00 | | 4 40 | —25 | ..... | 18 1,5 | | | |
| | 1 30 | | 4 40 | —25 | | | | | |
| | 1 55 | | 4 40 | —25 | ..... | 18 00 | | | |
| | 2 20 | | 4 40 | —25 | | | | | |
| | 3 15 | | 4 40 | —25 | ..... | 18 00 | Calm | Clear | *Max. easterly variation* took |
| | 3 55 | | 4 40 | —25 | ..... | 18 12 | | | place at $5^h\ 3^m$. |
| | 6 00 | | 4 40 | —25 | ..... | 17 59,8 | ..... | Hazy | |
| | 7 00 | | 5 00 | —25 | ..... | 18 00,7 | | | |
| | 7 25 | | 4 50 | —25 | | | | | |

To the left hand.

## North end of Needle to the South.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 19th | 7 40 | A. M. | S 4 00 E | —25 | | | | | |
| | 7 50 | | 3 40 | —25 | ... To the left hand. ... | ..... | ..... | Overcast | |
| | 8 00 | | 3 40 | —25 | ... ... | 18 3,6 | | | |
| | 9 30 | | 3 40 | —24 | ... ... | 18 3,7 | | | |
| | 10 00 | | 3 20 | —24½ | ... ... | 17 56,5 | ..... | Snow | |
| | 10 30 | | 3 15 | —24½ | ... ... | 18 2,5 | | | |
| | 11 30 | | 3 10 | —24½ | | | | | |
| | Noon | | 2 55 | —24½ | ... ... | 17 56,5 | ..... | ..... | *Max. westerly variation.* |
| | 0 10 | P. M. | 2 50 | —24½ | | | | | |
| | 0 20 | | S 0 30 W | —24½ | | | | | |
| | 0 30 | | 1 00 | —24½ | | | | | |
| | 0 45 | | 1 10 | —24½ | ..... | ..... | ..... | Clear | |
| | 1 00 | | 1 10 | —24½ | ..... | 18 2,3 | | | |
| | 1 30 | | 1 10 | —24½ | | | | | |
| | 2 00 | | 1 20 | —25 | ..... | 17 54,5 | | | |
| | + 2 30 | | 1 30 | —25 | | | | | |
| | 2 50 | | 1 30 | —25 | ..... | 17 50 | | | |
| | 3 30 | | 1 30 | —25 | | | | | |
| | 4 00 | | 1 20 | —26½ | ..... | 17 49 | | | |
| | 5 00 | | 1 20 | —26 | ..... | 17 50,5 | | | |
| | 6 5 | | 1 30 | —26 | ..... | 17 51,3 | | | |
| | 7 3 | | 1 10 | —27 | ..... | 17 51 | | | |
| | 7 45 | | 1 00 | —27 | ..... | 17 55,6 | | | |
| | 9 10 | | 1 20 | —27 | ..... | 17 53,2 | | | |
| | 9 30 | | 1 00 | —27 | | | | | |
| | 10 00 | | 0 30 | —27 | ..... | 17 56,7 | | | |
| | 10 30 | | South | —27 | | | | | |
| | 11 00 | | S 0 30 E | —27 | ..... | 17 54,5 | | | |
| | 11 40 | | 0 40 | —27½ | | | | | |
| | Mid^t. | | 1 00 | —27 | ..... | 17 54,5 | NE Light | | |
| Feb. 20th | 0 35 | A. M. | 1 20 | —27 | ..... | ..... | Calm | Clear and | |
| | 1 00 | | 1 30 | —28 | ..... | 17 55,8 | | fine. | |
| | 1 10 | | 2 00 | —28 | | | | | |
| | 1 30 | | 2 20 | —27 | | | | | |
| | 2 00 | | 2 40 | —27 | ..... | 17 57,2 | | | |
| | 2 10 | | 2 50 | —26½ | | | | | |
| | 2 30 | | 3 00 | —26½ | ..... | ..... | ..... | ..... | *Max. easterly variation.* |
| | 2 40 | | 3 00 | —26½ | | | | | |
| | 2 50 | | 3 10 | —26½ | | | | | |
| | — 3 00 | | 3 30 | —26½ | ..... | 17 58,1 | | | |
| | 3 30 | | 3 30 | —26½ | | | | | |
| | 4 00 | | 3 30 | —26½ | ..... | 18 00,3 | | | |
| | 6 3 | | 3 20 | —28 | .. Very little motion to the left hand. .. | 17 59,5 | | | |
| | 7 3 | | 3 20 | —29 | .. .. | 18 0,3 | | | |
| | 7 45 | | 3 20 | —29 | .. .. | 17 59,5 | | | |
| | 9 00 | | 3 20 | —28 | .. .. | 17 58 | | | |
| | 9 45 | | 3 10 | —28 | | | | | |
| | 9 55 | | 3 00 | —28 | .. .. | 17 56,2 | | | |
| | 10 20 | | 3 00 | —28 | .. to .. | 18 7,8 | | | |
| | 11 36 | | 3 00 | —28 | | | | | |

## North end of Needle to the South.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 20th | Noon | | S 2 50 E | —28 | .. To the left hand. .. | 17 58,3 | Northerly Light | Clear and fine | |
| | 0 7 | P.M. | 2 00 | —28 | | | | | |
| | 0 30 | | 2 00 | —28 | | | | | |
| | 1 00 | | 1 30 | —28 | .. .. | 17 53,7 | ..... | ..... | *Max. westerly variation.* |
| | 1 22 | | South | —27 | | | | | |
| | 2 00 | | S 0 20W | —28 | | | | | |
| | + 2 5 | | 0 30 | —28 | .. .. | 17 50,3 | | | |
| | 2 10 | | South | —28 | | | | | |
| | 2 30 | | S 0 10W | —28 | | | | | |
| | 2 55 | | 0 10 | —28 | ..... | 17 50,5 | | | |
| | 3 20 | | 0 10 | —28 | | | | | |
| | 3 35 | | S 3 00 E | —28 | | | | | |
| | 3 52 | | 3 40 | —28 | ..... | 17 57,2 | | | |
| | 5 8 | | 3 50 | —28½ | ..... | 17 54,5 | | | |
| | 6 00 | | 3 50 | —29 | ..... | 17 53,8 | | | |
| | 7 10 | | 3 40 | —29½ | .... .... | 17 54 | Ditto | Ditto | |
| | 7 40 | | 3 30 | —29½ | ..... | 17 54,7 | | | |
| | 9 3 | | 3 40 | —30 | ..... | 17 57,5 | | | |
| | 9 50 | | 3 40 | —29 | ..... | 17 55,6 | | | |
| | 11 00 | | 3 40 | —30 | ..... | 17 57,2 | | | |
| | 11 50 | | 3 40 | —31 | ..... | 17 59,4 | ..... | ..... | *Max. easterly variation.* |
| Feb. 21st | 0 35 | A. M. | 3 30 | —30 | | | | | |
| | 1 00 | | 3 40 | —30 | . Very little motion, and that to the right hand. . | 17 54,3 | Northerly Light | Clear and fine | |
| | 1 30 | | 3 40 | —30 | | | | | |
| | 2 00 | | 3 40 | —30 | . . | 17 54,7 | N. westerly | | |
| | 2 30 | | 3 40 | —30 | | | | | |
| | 3 00 | | 3 40 | —30 | . . | 17 57,7 | | | |
| | 3 30 | | 3 49 | —30 | | | | | |
| | 4 00 | | 3 40 | —30 | . . | 18 0,5 | | | |
| | 4 20 | | 3 40 | —31 | . . | ..... | Calm | | |
| | 5 5 | | 3 40 | —31 | ..... | 18 9,2 | | | |
| | 5 30 | | 3 50 | —31 | | | | | |
| | 6 00 | | 3 50 | —31 | ..... | 18 3,5 | | | |
| | 6 28 | | 3 50 | —31 | | | | | |
| | — 7 00 | | 4 00 | —31 | .. .. | 17 59,1 | ..... | ..... | *Max. Westerly variation.* |
| | 7 35 | | 3 50 | —31 | | | | | |
| | 7 52 | | 3 40 | —31 | .. .. | 17 57,5 | | | |
| | 9 30 | | 3 30 | —32 | .. .. | 17 58,5 | | | |
| | 10 00 | | 3 20 | —32 | .. .. | 18 4,5 | Calm | Clear and fine | Observed the needle oscillate in small arcs previous to its becoming stationary from $10^h\ 20^m$ to $1^h$ P. M. |
| | + 10 20 | | 2 50 | —32 | | | | | |
| | 11 00 | | 2 50 | —32 | .. To the left hand. .. | 17 51,8 | | | |
| | 11 30 | | 2 55 | —32 | | | | | |
| | Noon | | 2 50 | —32 | ..... | 17 50,7 | | | |
| | 0 30 | P. M. | 2 50 | —32 | | | | | |
| | 1 00 | | 2 50 | —32 | ..... | 17 49,8 | | | |
| | 1 30 | | 3 00 | —32 | ..... | ..... | ..... | ..... | Parhelion on each side of sun. Needle gently oscillating in very small arcs. |
| | 1 40 | | 3 10 | —32 | | | | | |
| | 2 00 | | 3 20 | —32 | ..... | 17 50,9 | | | |
| | 2 30 | | 3 30 | —32 | | | | | |
| | 3 6 | | 3 50 | —30 | ..... | 17 54,1 | | | |

## North end of Needle to the South.

| Date. | Mean Time of Observation. | A.M. or P.M. | Reading of north end of needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | | | m. s. | | | |
| Feb. 21st | 3 10 | P.M. | S 4 00 E | —30 | | | | | |
| | 3 20 | | 4 00 | —30 | | | | | |
| | 3 40 | | 3 50 | —30 | ..... | 17 50,8 | | | |
| | 4 55 | | 3 40 | —30 | ..... | 17 50,5 | | | |
| | 6 00 | | 3 40 | —30 | ..... | 17 43,5 | | | |
| | 7 00 | | 3 40 | —32 | ..... | 17 48 | | | |
| | 7 45 | | 7 30 | —31 | ..... | 17 50,5 | | | |
| | — 9 20 | | 7 50 | —29 | ..... | 17 50,0 | ..... | ..... | ☽ setting to the E N E by compass. |
| | 10 00 | | 7 00 | —29 | ..... | 17 54,5 | | | |
| | 10 30 | | 7 00 | —29 | | | | | |
| | 11 00 | | 7 00 | —29 | ..... | 17 57,8 | | | |
| | 11 30 | | 6 50 | —29 | ..... | ..... | N. westerly, light | Hazy low down | |
| | Midnᵗ | | 6 50 | —29 | ..... | 17 58,3 | | | *Max. easterly var.* |
| Feb. 22d | 0 30 | A.M. | 6 50 | —29 | ..... | ..... | | Clear and fine | At 2ʰ the Aurora suddenly appeared in an arch from north to west by compass, with bright streamers shooting towards the zenith; the needle under the influence of magnets was not affected in any way whatever that I observed after watching it for one-quarter of an hour, when the Aurora became extremely faint. |
| | 1 00 | | 6 50 | —29 | ..... | 17 56,5 | | | |
| | 1 30 | | 6 40 | —29 | | | | | |
| | 2 00 | | 6 20 | —29 | ..... | 18 00 | | | |
| | 2 15 | | 6 20 | —29 | | | | | |
| | 2 36 | | 6 40 | —28½ | | | | | |
| | 3 00 | | 6 20 | —28½ | ..... | 17 58,3 | | | |
| | 3 32 | | 6 20 | —28½ | | | | | |
| | 4 6 | | 6 20 | —28½ | .. .. | 17 56,4 | | | |
| | 5 40 | | 6 10 | —28½ | .. .. | 18 5,5 | | | |
| | 7 00 | | 5 20 | —29 | .. .. | 18 1,1 | | | |
| | 7 50 | | 5 20 | —28½ | .. .. | 18 9,0 | | | |
| | 9 10 | | 5 00 | —28½ | .. .. | 18 4,8 | | | |
| | 9 56 | | 4 50 | —28½ | | | | | |
| | 10 20 | | 4 30 | —28½ | . .. | 18 14,8 | | | |
| | 10 50 | | 3 50 | —28½ | ..... | 17 54,9 | | | |
| | 11 20 | | S 1 00W | —28½ | ..... | ..... | .. .. | .... ... | *Max. westerly var.* |
| | +11 50 | | 1 00 | —27 | ..... | 17 50,3 | | | |
| | 0 30 | P.M. | 1 00 | —27 | | | | | |
| | 1 00 | | 0 30 | —27 | ..... | 17 51,5 | | | |
| | 1 55 | | 0 30 | —27 | ..... | 17 50 | | | |
| | 2 52 | | 0 20 | —27 | ..... | 17 54 | | | |
| | 3 52 | | S 1 00 E | —28 | ..... | 17 56 | | | |
| | 5 00 | | 1 10 | —27½ | ..... | 17 55,9 | .. .. | .. .. | ☽ N. W. by compass. |
| | 5 55 | | 1 10 | —28 | ..... | 17 52,2 | | | |
| | 6 24 | | 1 20 | —27½ | | | | | |
| | 7 00 | | 1 30 | —28 | ..... | 17 55,2 | | | |
| | 7 35 | | 1 30 | —28 | ..... | 17 54,7 | | | |
| | 9 00 | | 2 5 | —28 | ..... | 17 52,7 | | | |
| | 9 5 | | 4 40 | —28 | | | | | |
| | 9 12 | | 4 50 | —28 | | | | | |
| | 9 30 | | 4 50 | —28 | | | | | |
| | 10 00 | | 4 50 | —28 | ..... | 17 55,7 | | | |
| | 10 30 | | 5 00 | —28 | | | | | |
| | 11 00 | | 5 10 | —28 | ..... | 17 54 | ..... | ..... | Aurora faint N. W. |
| | 11 30 | | 5 30 | —28 | | | | | ☽ east by compass. |
| | Midnᵗ | | 5 30 | —28 | ..... | 17 53,2 | ..... | ..... | Aurora from N. to W. |

To the left hand.

Calms, succeeded by light airs from the northward.

Hazy near the horizon.

## North end of Needle to the East.

The axes of the magnets placed north and south of the needle, were on this occasion inclined to the magnetic meridian at an angle of 22 degrees; the distance of the nearest ends of each, from the centre of the compass-box was 28 inches, and the time of performing one vibration by the needle was 16,4 seconds, so that the directive power now, was to the undiminished force as 0,113 to 1.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb 23rd. | 1 00 | A. M. | E 1 00 N | —26 | ..... | 17 57,2 | Eastward | Clear | |
| | 1 55 | | E 2 00 S | —27 | ..... | 18 3,6 | ..... | ..... | *Max. easterly var.* |
| | 3 00 | | 10 00 | —27 | ..... | 18 5,2 | ..... | ..... | Aurora bright to the north; at 4h brilliant from NW to NE by (compass.) |
| | 4 15 | | 8 00 | —27 | ..... | 18 2,6 | | | |
| | 5 30 | | 7 30 | —27 | ..... | 18 3,4 | | | |
| | 6 00 | | 7 30 | —27 | ..... | 18 9,5 | | | |
| | 6 40 | | 7 30 | —27 | | | | | |
| | 7 00 | | 4 40 | —26½ | | | | | |
| | 7 5 | | 10 00 | —26½ | ..... | 18 13,7 | | | |
| | 7 20 | | 19 00 | —26 | | | | | |
| | 7 25 | | 18 30 | —26 | | | | | |
| | 7 30 | | 19 40 | —26 | | | | | |
| | + 7 32 | | 20 00 | —26 | | | | | |
| | 7 35 | | 20 10 | —26 | | | | | |
| | 7 40 | | 19 00 | —26 | | | | | |
| | 7 42 | | 18 50 | —27 | ..... | ..... | ..... | ..... | The *max. westerly var.* happened by the suspended needles at 10h 48m nearly. The indications of this needle appear to be rather those of changes of intensity than of direction, since the irregularities (by comparing them with the times of vib. of a hor. needle), were found to follow that law. |
| | 8 8 | | 10 00 | —27 | ..... | 18 11,1 | Easterly | Hazy | |
| | 8 12 | | 9 30 | —27 | ..... | ..... | Fresh | | |
| | 9 10 | | 4 40 | —27 | ..... | 18 1,5 | | | |
| | 9 30 | | 5 00 | —27 | | | | | |
| | 9 40 | | 6 10 | —27 | | | | | |
| | 10 10 | | 6 50 | —26½ | ..... | 18 2,3 | | | |
| | 10 30 | | 3 00 | —26 | | | | | |
| | 10 40 | | 4 30 | —26 | | | | | |
| | 11 00 | | 4 00 | —26 | ..... | 17 59,3 | | | |
| | 11 30 | | East | | | | | | |
| | 11 33 | | E 1 00 N | —26 | | | | | |
| | 11 36 | | 0 30 | —26 | | | | | |
| | 11 40 | | East | | | | | | |
| | 11 45 | | E 1 00 S | —25 | | | | | |
| | Noon | | 2 00 | —25 | ..... | 17 59,6 | East | Hazy | Very cold W. |
| | 0 10 | P. M. | 1 30 | —25 | ..... | ..... | ..... | Clear overhead, much drift, weather very cold. | |
| | 0 50 | | East | —25½ | ..... | ..... | Fresh | | |
| | 1 00 | | E 3 00 N | —25½ | ..... | 17 54,5 | | | |
| | 1 15 | | 4 20 | —25½ | | | | | |
| | 1 25 | | 5 10 | —25½ | | | | | |
| | 1 30 | | 5 10 | —25½ | | | | | |
| | 1 35 | | 5 00 | —25½ | | | | | |
| | 1 45 | | 5 20 | —25½ | | | | | |
| | 2 00 | | 5 30 | —25½ | ..... | 17 51,3 | | | |
| | 2 10 | | 5 20 | —25½ | | | | | |
| | 2 30 | | 4 00 | —25½ | | | | | |
| | 3 00 | | 4 00 | —25½ | ..... | 17 54 | | | |
| | 3 25 | | 4 00 | —25½ | | | | | |
| | 3 55 | | 4 00 | —25½ | ..... | 17 51,4 | | | |
| | 5 30 | | 5 00 | —25½ | ..... | 17 50,1 | | | |

## North end of Needle to the East.

| Date. | Mean Time of Observation. | A M. or P. M. | Reading of north end of needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | W'nds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 23rd | 6 00 | P. M. | E 5 00 N | —25½ | ..... | 17 53,7 | | | |
| | 6 40 | | 5 00 | —25½ | ..... | 17 51,8 | | | |
| | 7 40 | | 5 00 | —26 | ..... | 17 46,3 | ..... | ..... | Aurora faint to the northward. |
| | — 8 30 | | 6 20 | —26 | | | | | |
| | 8 40 | | 6 00 | —26 | | | | | |
| | 9 00 | | 5 10 | —26 | ..... | 17 50,7 | | | |
| | 9 10 | | 4 10 | —25 | | | | | |
| | 9 20 | | 3 30 | —25 | | | | | |
| | 9 30 | | 3 30 | —25 | | | | | |
| | 9 40 | | 3 00 | —25 | | | | | |
| | 9 45 | | 3 20 | —25 | | | | | |
| | 10 00 | | 3 10 | —25 | ..... | 17 52,2 | | | |
| | 10 30 | | 3 00 | —25 | | | | | |
| | 10 45 | | 2 30 | —25 | | | | | |
| | 11 00 | | 2 00 | —25 | ..... | 17 55 | | | |
| | 11 15 | | 1 40 | —25 | | | | | |
| | 11 30 | | 1 30 | —25 | | | | | |
| | 11 38 | | 1 00 | —25 | ..... | ..... | Eastward | | |
| | Midnᵗ | | 1 00 | —25 | ..... | 17 55,3 | Fresh | Thick hazy | ☽ ESE by comp. |
| Feb. 24th | 0 5 | A. M. | 0 40 | —25 | ..... | ..... | | Hazyweather | ☽ E bS by comp. |
| | 1 26 | | East | | ..... | 17 56,5 | ..... | ..... | *Max. easterly var.* |
| | 1 56 | | E 0 10 S | —25 | ..... | 17 58 | | | |
| | 2 15 | | 0 50 | —25 | | | | | |
| | 2 40 | | 1 00 | —25 | | | | | |
| | 3 10 | | 0 55 | —25½ | ..... | 17 56,3 | | | |
| | 5 40 | | 2 30 | —26 | ..... | 18 0,6 | ..... | ..... | Aurora faint. |
| | 6 40 | | 5 00 | —26 | | | | | |
| | + 7 40 | | 5 30 | —27 | ..... | 18 1,5 | Squally | | |
| | 8 56 | | 5 10 | —27 | ..... | 18 2,7 | | | |
| | 9 40 | | 4 45 | —27 | ..... | 17 55,8 | | | |
| | 9 55 | | 3 00 | —27 | ..... | 17 52,8 | | | |
| | 10 30 | | 2 30 | —26½ | | | | | |
| | 10 50 | | 1 30 | —26½ | ..... | 17 49,4 | | | |
| | 11 00 | | 1 00 | —26½ | ..... | ..... | ..... | ..... | *Max. westerly var.* |
| | 11 30 | | 0 40 | —26½ | | | | | Needle proceeding to the northward by gentle vibrations in small arcs. |
| | Noon | | 0 50 | —26½ | ..... | 18 2,4 | | | |
| | 0 30 | P. M | 0 30 | —26½ | | | | | |
| | 0 45 | | 0 30 | —26 | | | | | |
| | 1 15 | | E 0 30 N | —26 | ..... | 17 52,3 | | | |
| | 1 30 | | 1 30 | —26 | | | | | |
| | — 3 30 | | 2 20 | —27 | ..... | 17 51,5 | | | |
| | 4 45 | | 2 00 | —26 | ..... | 17 53 | | | |
| | 5 50 | | 2 00 | —25 | ..... | 17 55,2 | | | |
| | 6 50 | | 2 00 | —25 | ..... | 17 55,4 | | | |
| | 7 15 | | 2 00 | —25 | | | | | |
| | 9 12 | | 1 50 | —25 | ..... | 17 55,6 | East | Cloudy | |
| | 9 40 | | 1 30 | —25½ | ..... | 17 54,1 | Fresh | | |
| | 10 25 | | 1 30 | —26 | | | | | |

## North end of Needle to the East.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 24th | 10 50 | P. M. | E 1 30 N | —26 | ..... | 17 54,9 | Mod. | | ☽ N. by comp. |
| | 11 25 | | 1 30 | —26 | | | | | |
| | Midnt | | 1 30 | —26 | ..... | 17 55,2 | | | |
| Feb. 25th | 1 00 | A. M. | 1 40 | —26 | ..... | 17 55,5 | N. Eastly | Clear | *Max. easterly variation.* |
| | 3 30 | | 1 40 | —26½ | ..... | ..... | moderate | | |
| | 4 00 | | 1 40 | —26½ | ..... | 17 55,3 | | | |
| | 4 20 | | 1 30 | —26½ | | | | | |
| | 5 00 | | 1 20 | —26 | ..... | 17 58,2 | | | |
| | 5 30 | | 1 10 | —25½ | | | | | |
| | 5 45 | | East | —25½ | ..... | | | | |
| | 5 50 | | E 3 00 S | —25½ | | | | | |
| | 6 00 | | 3 00 | —25½ | ..... | 17 57,9 | ..... | ..... | Needle gently vibrating in small arcs. |
| | 6 3 | | 2 50 | —25½ | ..... | ..... | ..... | ..... | |
| | 6 4 | | 3 00 | —25½ | ..... | ..... | ..... | ..... | |
| | + 6 30 | | 3 10 | —25½ | | | | | |
| | 7 00 | | 3 00 | —26 | ..... | 17 59,4 | | | |
| | 7 30 | | 3 10 | —26 | | | | | |
| | 9 45 | | 3 00 | —26½ | ..... | 17 58,2 | ..... | ..... | *Max. westerly var.* took place at 10h A.M. |
| | 11 00 | | 3 10 | —26 | ..... | 17 59,2 | Easterly light | Clear and fine | |
| | 11 46 | | 3 00 | —26 | | | | | |
| | 0 15 | P. M. | 3 00 | —26 | ..... | 17 58,9 | | | |
| | 1 00 | | 2 30 | —26 | ..... | 17 55,2 | | | |
| | 1 20 | | 2 30 | —26 | | | | | |
| | 1 30 | | 2 00 | —26 | | | | | |
| | 2 00 | | 1 30 | —26½ | ..... | 17 49,5 | Easterly | Ditto | |
| | 2 5 | | 0 20 | —26½ | ..... | ..... | moderate | | |
| | 2 10 | | East | —26½ | | | | | |
| | 2 15 | | E 1 40 N | —26½ | | | | | |
| | 3 5 | | 2 00 | —26½ | ..... | 17 53,6 | | | |
| | 4 0 | | 2 00 | —27 | ..... | 17 53,8 | | | |
| | — 5 7 | | 2 10 | —27 | ..... | 17 52,9 | | | |
| | 6 5 | | 2 00 | —27 | ..... | 17 54,5 | | | |
| | 7 0 | | 2 00 | —27 | ..... | 17 55,8 | | | |
| | 7 40 | | 2 00 | —27 | ..... | 17 56,2 | | | |
| | 9 00 | | 2 00 | —27 | ..... | 17 54 | | | |
| | 9 30 | | 2 00 | —27 | | | | | |
| | 10 00 | | 1 50 | —27 | ..... | 17 54,5 | East | Hazy | |
| | 10 30 | | 1 40 | —27 | | | Fresh | | |
| | 11 00 | | 1 30 | —27 | ..... | 17 54,8 | | | |
| | Midnt | | 1 30 | —27 | ..... | 17 54,7 | | | |

## North end of Needle to the West.

What has been said of the adjustment of the magnets at the commencement of the observations at East, obtain here also; except that the axis of each magnet in this instance, was oppositely inclined to the meridian at an angle of 22 degrees, in order to direct the north end of the needle into its present position.

| Date. | Mean Time of Obser-vation. | A.M. or P.M. | Reading of north end of needle. | Temp. Fahren$^{t}$. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 26th | 1 00 | A.M. | West | —27 | ..... | ..... | East | Hazy | *Max. easterly var.* |
| | 2 00 | | W 2 40 N | —27 | ..... | 17 55,8 | strong | | |
| | 2 35 | | 3 30 | —27 | | | | | |
| | 3 00 | | 3 30 | —26 | ..... | 17 55,4 | | | |
| | 3 30 | | 3 30 | —26 | ..... | 17 56,0 | | | |
| | 3 55 | | 3 40 | —26 | | | | | |
| | 5 30 | | 4 30 | —25 | ..... | 18 00,2 | | | |
| | — 6 4 | | 4 50 | —25 | ..... | 17 58,1 | | | |
| | 7 5 | | 4 40 | —25 | ..... | 18 00,5 | | | |
| | 9 30 | | 4 40 | —25 | ..... | 18 2,2 | | | |
| | 10 00 | | 4 40 | —22 | ..... | 17 57,3 | | | |
| | 11 00 | | 4 30 | —21 | ..... | 17 57,0 | | | |
| | Noon | | 2 30 | —21 | ..... | 17 55,5 | | | |
| | 1 00 | P.M. | 1 40 | —21 | ..... | 17 55,7 | | | |
| | 1 30 | | 1 00 | —21 | ..... | ..... | ESE | Strong gales, withdrift. | |
| | 1 45 | | West | —21 | | | | | |
| | 1 50 | | W 1 40 N | —21 | | | | | |
| | 2 15 | | 1 00 | —21 | ..... | 17 56,5 | ..... | ..... | *Max. westerly var.* |
| | 2 20 | | West | —21 | | | | | |
| | 2 30 | | W 0 10 S | —21 | | | | | |
| | 3 9 | | West | —19 | ..... | 17 57,6 | | | |
| | 3 50 | | West | —19 | ..... | 17 56,5 | | | |
| | + 5 30 | | W 0 15 S | —18 | ..... | 17 57,4 | | | |
| | 6 20 | | W 0 10 N | —17 | ..... | 17 56,8 | ..... | ..... | ☽ WNW by compass. |
| | 6 55 | | 0 10 | —17 | ..... | 17 56,6 | | | |
| | 7 40 | | 0 20 | —16 | ..... | 17 56,9 | | | |
| | 9 30 | | 0 30 | —14½ | ..... | 18 00 | | | |
| | 10 00 | | 0 30 | —14½ | ..... | 18 00,5 | ESE | Thick & | |
| | 10 30 | | 0 30 | —14½ | ..... | ..... | strong | hazy | |
| | 11 00 | | 0 30 | —14½ | ..... | 18 1,3 | ..... | ..... | *Max. easterly var.* |
| | 11 30 | | 0 30 | —14½ | | | | | |
| | Midn$^{t}$ | | 0 40 | —14½ | ..... | 18 1,5 | | | |
| Feb. 27th | 0 15 | A. M. | 1 00 | —14½ | ..... | ..... | Easterly | Thick & | |
| | 1 8 | | 1 20 | —14 | ..... | 18 1,5 | light | hazy with | |
| | 2 5 | | 1 30 | —14 | ..... | 18 3,7 | | snow | |
| | 3 00 | | 1 40 | —14 | ..... | 18 3,8 | | | |
| | 3 50 | | 1 40 | —14 | ..... | 18 4,2 | | | |
| | 5 30 | | 1 50 | —14 | ..... | 18 3,5 | | | |
| | 6 10 | | 1 50 | —14 | ..... | 18 2,2 | | | |
| | 6 30 | | 1 50 | —14½ | | | | | |
| | 7 00 | | 1 50 | —14 | ..... | 18 3,2 | | | |
| | 7 55 | | 1 55 | —14 | ..... | 18 5,0 | Calm | Cloudy | |
| | 9 00 | | 1 55 | —14 | ..... | 18 4,9 | | | |

## North end of Needle to the West.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 27th | 9 30 | A. M. | W 2 00 N | —14 | | | | | |
| | 10 00 | | 2 00 | —13 | ..... | 18 7,5 | | | |
| | 10 34 | | 3 00 | —14 | | | | | |
| | 11 00 | | 3 40 | —12 | ..... | 18 8,2 | East Light | Hazy | |
| | —11 20 | | 4 00 | —13 | | | | | |
| | 11 46 | | 3 40 | —13 | | | | | |
| | Noon. | | 2 30 | —13 | ..... | 18 4,0 | | | |
| | 0 20 | P. M. | 2 20 | —12 | | | | | |
| | 0 30 | | 2 20 | —12 | | | | | |
| | 1 00 | | 2 20 | —12 | ..... | 18 4,5 | | | |
| | 2 00 | | 2 00 | —12 | ..... | 18 0,2 | ..... | ..... | *Max. westerly var.* |
| | 2 10 | | 1 30 | —12 | ..... | ..... | East | Clear | |
| | 2 50 | | 1 00 | —12 | ..... | 18 0,7 | Moderate | | ⊙ on north mag. merid. |
| | 4 30 | | 0 50 | —12½ | ..... | 18 0,5 | | | |
| | 5 00 | | 0 50 | —12½ | ..... | 17 59 | Ditto | Cloudy | |
| | 5 34 | | 0 50 | —12½ | | | | | |
| | 6 5 | | 0 50 | —13 | ..... | 18 0,4 | | | |
| | 7 10 | | 0 40 | —13 | ..... | 18 2,6 | Ditto | Very Hazy | |
| | 7 55 | | 0 40 | —13 | ..... | 18 2,2 | | | |
| | 9 30 | | 0 30 | —13 | ..... | 18 2 | | | |
| | +10 5 | | 0 20 | —14 | ..... | 18 2,4 | ..... | ..... | *Max. easterly var.* |
| | 10 58 | | 0 20 | —14 | ..... | 18 1,1 | | | |
| | 11 30 | | 0 20 | —13½ | | | | | |
| | Midᵗ. | | 0 20 | —13 | ..... | 18 1,5 | | | |
| Feb. 28th | 0 15 | A. M. | 0 30 | —13½ | ..... | 18 1,0 | North Moderate | Cloudy | |
| | 1 20 | | 0 40 | —13 | | | | | |
| | 1 40 | | 0 40 | —13½ | | | | | |
| | 2 6 | | 0 50 | —13½ | ..... | 18 2,3 | | | |
| | 2 30 | | 0 50 | —13½ | | | | | |
| | 3 00 | | 0 50 | —13½ | ..... | 18 1,1 | | | |
| | 3 40 | | 0 55 | —13½ | ..... | 18 1,4 | N. W. | Hazy | |
| | 5 6 | | 1 10 | —13 | ..... | 18 4,1 | Moderate | | |
| | 6 5 | | 1 30 | —13 | ..... | 18 5,0 | | | |
| | 7 3 | | 1 40 | —13 | ..... | 18 5,0 | | | |
| | 7 50 | | 2 00 | —14 | ..... | 18 6,5 | | | |
| | 9 00 | | 3 25 | —14 | ..... | 18 5,4 | | | |
| | 9 30 | | 3 30 | —14½ | ..... | ..... | North Light | Clear and Fine | |
| | — 9 40 | | 3 40 | —14 | | | | | |
| | 10 15 | | 3 40 | —14 | ..... | 18 2,8 | | | |
| | 10 45 | | 3 30 | —14 | | | | | |
| | 11 00 | | 3 00 | —14 | ..... | 18 1,5 | | | |
| | 11 25 | | 3 00 | —14 | | | | | |
| | 11 40 | | 2 30 | —14 | | | | | |
| | Noon | | 2 30 | —14 | ..... | 18 0,5 | ..... | ..... | *Max. westerly var.* |
| | 1 00 | P. M. | 1 30 | —14 | ..... | 17 56,6 | | | |
| | 1 30 | | West | —14 | | | | | |
| | 2 00 | | West | —14 | ..... | 17 59,3 | | | |
| | 2 20 | | West | —14 | | | | | |
| | + 2 45 | | W 0 30 S | —15 | ..... | 17 58,8 | | | |

## North end of Needle to the West.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Feb. 28th | 5 6 | P. M. | W 0 20 S | —17 | ..... | 17 57,5 | Easterly Light | Clear and Fine | |
| | 6 3 | | 0 5 | —18 | ..... | 17 57,3 | | | |
| | 6 55 | | W 0 20 N | —19 | ..... | 17 59,6 | | | |
| | 7 00 | | 0 30 | —19 | | | | | |
| | 7 55 | | 0 40 | —19 | ..... | 17 59,0 | | | |
| | 9 30 | | 0 40 | —20 | ..... | 17 57,2 | | | |
| | 10 00 | | 1 00 | —20 | ..... | 17 57,7 | | | |
| | 10 30 | | 1 00 | —20 | | | | | |
| | 11 6 | | 1 00 | —20 | ..... | 17 57,6 | Ditto | Overcast westward | |
| | 11 40 | | 1 00 | —20 | | | | | |
| | Midt. | | 1 00 | —20 | ..... | 17 58,1 | | | |
| March 1st | 1 00 | A. M. | 1 00 | —19½ | ..... | 17 59,5 | | | |
| | 1 30 | | 1 00 | —19 | | | | | |
| | 2 00 | | 1 10 | —18½ | ..... | 18 00 | ..... | ..... | *Max. easterly variation.* |
| | 3 00 | | 2 30 | —18½ | ..... | 17 59,3 | | | |
| | 5 10 | | 4 00 | —19 | ..... | 18 1,4 | S. W. Moderate | Hazy westward | |
| | 6 8 | | 4 30 | —19 | ..... | 18 3,3 | | | |
| | 7 6 | | 5 00 | —20 | ..... | 18 4,8 | | | |
| | — 7 40 | | 7 50 | —20 | ..... | 18 8,2 | | | |
| | 9 00 | | 7 30 | —21½ | ..... | 18 11 | | | |
| | 9 30 | | 7 30 | —22 | | | | | |
| | 10 15 | | 7 30 | —22 | ..... | 18 7,8 | NE by E Fresh | Thick with drift | |
| | 10 45 | | 7 30 | —23 | | | | | |
| | 11 15 | | 7 30 | —23 | ..... | 18 9,5 | | | |
| | 11 45 | | 5 30 | —24 | ..... | ..... | ..... | ..... | *Max. westerly variation.* |
| | Noon. | | 4 00 | —24 | ..... | 17 50,5 | | | |
| | 0 8 | P. M. | West | —24 | | | | | |
| | + 0 30 | | W 0 30 S | —24½ | | | | | |
| | 1 00 | | 0 30 | —24½ | ..... | 17 52 | NE Fresh | Overcast | |
| | 1 30 | | West | —24½ | | | | | |
| | 2 00 | | West | —24½ | ..... | 17 53,2 | | | |
| | 2 30 | | West | —24½ | | | | | |
| | 3 00 | | W 1 00 N | —25½ | ..... | 17 52,8 | | | |
| | 3 30 | | 1 5 | —25½ | | | | | |
| | 4 4 | | 1 15 | —26 | ..... | 17 54,3 | | | |
| | 5 10 | | 1 30 | —26 | ..... | 17 55,2 | North Light | Hazy | *Max. easterly variation.* |
| | 6 00 | | 2 00 | —26 | ..... | 17 56 | | | |
| | 7 00 | | 2 10 | —26 | ..... | 17 56,6 | | | |
| | 7 50 | | 2 10 | —26 | ..... | 17 57,8 | | | |
| | 10 30 | | 2 00 | —30 | ..... | 17 55,0 | | | |
| | 11 00 | | 2 00 | —30 | ..... | 17 54,0 | N. Easte'y Light | Clear and Fine | D Mag. North. |
| | —11 30 | | 2 20 | —30 | ..... | ..... | | | |
| | Midnt | | 2 00 | —30 | ..... | 17 55,5 | | | |

It will be seen, that when the north end of the needle pointed towards the east or west, the direction of its motion during the time of westerly daily variation, is not specified according to the mode described; I have not ventured to do so, in consequence of the many irregularities in its direction, produced by the variations of horizontal intensity, which were always indicated by this needle, and which rendered its direction as to the *right and left hand* during the time of westerly daily variation, very doubtful.

## North end of Needle to the S. W.

The distance of the nearest ends of the magnets from the centre of the compass 27 inches; the axis of each magnet was inclined to the magnetic meridian, and the needle under their influence made one vibration in $12\frac{1}{2}$ seconds; so that the directive force now, was to the undiminished force as 0,20 to 1.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahren. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 2d | 1 00 | A. M. | S 42 00W | —29 | ..... | 17 56,3 | Northerly Light | Clear and Fine | |
| | 1 30 | | 41 50 | —30 | | | | | |
| | 2 00 | | 41 30 | —$29\frac{1}{2}$ | ..... | 17 58 | | | |
| | 2 30 | | 40 50 | —30 | | | | | |
| | 3 20 | | 40 20 | —30 | ..... | 17 59,1 | Calm | | |
| | 4 00 | | 39 50 | —$30\frac{1}{2}$ | ..... | 18 9,3 | | | |
| | 5 6 | | 40 00 | —31 | ..... | 18 3 | Easterly Light | Clear and Fine | |
| | 6 8 | | 40 20 | —31 | ..... | 18 3 | | | |
| | 7 6 | | 41 20 | —31 | ..... | 18 1,8 | | | |
| | 7 54 | | 41 30 | —32 | ..... | 18 1 | | | |
| | 9 00 | | 43 20 | —32 | ..... | 18 00,5 | | | |
| | 9 30 | | 44 00 | —32 | | | | | |
| | 10 00 | | 45 30 | —32 | .. To the left hand. .. | 17 53,2 | ..... | ..... | *Max. westerly variation.* |
| | 10 30 | | 46 10 | —31 | | | | | |
| | 11 00 | | 46 20 | —30 | .. .. | 17 53,6 | | | |
| | 11 30 | | 45 50 | —30 | | | | | |
| | 0 15 | P. M. | 45 30 | —30 | .. .. | 18 2,2 | | | |
| | 0 35 | | 45 30 | —30 | | | | | |
| | 1 00 | | 45 30 | —30 | .. .. | 17 58,8 | ..... | ..... | At 1h 25′ P.M. the needle commenced moving rapidly to the westward, intensity at that time increasing. |
| | 1 30 | | 49 30 | —30 | | | | | |
| | + 1 40 | | 50 15 | —30 | | | | | |
| | 2 00 | | 50 10 | —$29\frac{1}{2}$ | ..... | 17 48,5 | | | |
| | 2 30 | | 50 00 | —$29\frac{1}{2}$ | | | | | |
| | 3 5 | | 48 20 | —29 | ..... | 17 46,5 | | | |
| | 3 55 | | 47 40 | —29 | ..... | 17 49 | | | |
| | 5 00 | | 44 30 | —$29\frac{1}{2}$ | ..... | 17 53,6 | ..... | Very Hazy | |
| | 5 40 | | 44 20 | —$29\frac{1}{2}$ | ..... | 17 52,8 | | | |
| | 6 15 | | 44 00 | —$29\frac{1}{2}$ | ..... | 17 54,4 | | | |
| | 7 00 | | 43 55 | —30 | ..... | ..... | ..... | Clearer | |
| | 7 40 | | 44 00 | —30 | | | | | |
| | 8 00 | | 44 00 | —30 | ..... | 17 52,7 | | | |
| | 9 00 | | 44 00 | —$30\frac{1}{2}$ | ..... | 17 53,5 | Easterly Light | Clear and Fine | |
| | 11 00 | | 43 40 | —31 | ..... | 17 54,2 | | | |
| | Midt. | | 43 00 | —31 | ..... | 17 54 | ..... | ..... | *Max. easterly variation.* |
| Mar. 3d | 1 10 | A. M. | 42 30 | —31 | ..... | 17 57,0 | Easterly Light | Clear and Fine | |
| | 2 6 | | 40 20 | —31 | ..... | 17 59,6 | | | |
| | 3 0 | | 39 50 | —31 | ..... | 18 1,3 | | | |
| | 3 50 | | 38 30 | —31 | ..... | 18 8,5 | | | |
| | 5 10 | | 40 40 | —31 | ..... | 17 57,4 | Squally | Hazy | |
| | 5 40 | | 41 20 | —31 | | | | | |

## North end of Needle to the SW.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds, | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | * This sudden change of the needle in an easterly direction is ascribed to a change of horizontal intensity, which is pointed out by the varying intervals in which the needle performed 60 vibrations. |
| Mar. 3rd | 6 15 | A. M. | S 41 30W | −31 | ..... | 17 55,5 | | | |
| | 6 50 | | 42 00 | −31½ | | | | | |
| | 7 25 | | 42 50 | −31½ | ..... | 17 56,3 | | | |
| | 8 4 | | 42 50 | −31½ | ..... | 17 57,1 | | | |
| | 9 50 | | 40 00* | −31 | | | | | |
| | 9 55 | | 38 30 | −29 | ..... | 18 13,3 | | | |
| | 10 20 | | 37 30 | −29 | | | | | |
| | 10 30 | | 37 30 | −29 | | | | | |
| | −10 55 | | † 37 00 | −29 | ..... | 18 14,5 | ☽ South mag$^{t}$. | | † This change is also considered to be produced by a change of horizontal intensity. |
| | 11 00 | | 38 50 | −28½ | | | | | |
| | 11 20 | | 45 30 | −28½ | | | | | |
| | 11 35 | | 47 10 | −28½ | | | | | |
| | 11 40 | | 47 40 | −28 | | | | | |
| | 11 42 | | 48 00 | −28 | ..... | ..... | Easterly | Overcast | *Max. westerly var.* at 11$^{h}$ 22$^{m}$ A.M. |
| | 11 50 | | 49 30 | −28 | | | moderate | | |
| | 11 55 | | 49 50 | −28 | | | | | |
| | Noon. | | 50 00 | −28 | .. To the left hand. .. | 17 43,2 | | | |
| | 0 15 | P. M. | 50 00 | −28 | .. .. | ..... | ESE | Hazy | |
| | 1 10 | | 49 40 | −28 | .. .. | 17 46,3 | Fresh | with drift | |
| | 1 40 | | 49 30 | −28 | | | | | |
| | 2 20 | | 49 00 | −28 | .. .. | 17 55,4 | | | |
| | 2 50 | | 48 40 | −28 | | | | | |
| | 3 10 | | 48 40 | −28 | ..... | 17 52,4 | | | |
| | 3 45 | | 48 40 | −28 | ..... | 17 46,7 | | | |
| | + 5 6 | | 53 20 | −27 | ..... | 17 40,8 | | | |
| | 6 5 | | 51 10 | −27 | ..... | 17 48,5 | East, strong; thick | | |
| | 7 4 | | 51 00 | −27 | ..... | 17 46,8 | near the horizon, | | |
| | 7 50 | | 45 30 | −27 | ..... | 17 49,6 | clear over head. | | |
| | 9 30 | | 45 30 | −27 | ..... | 17 53 | | | |
| | 10 15 | | 45 25 | −26½ | ..... | 17 55,5 | | | |
| | 11 10 | | 44 20 | −26 | ..... | 17 56,3 | | | |
| | 11 12 | | 43 50 | −26 | ..... | ..... | ..... | ..... | *Max. easterly var.* |
| | 11 45 | | 42 30 | −26½ | ..... | ..... | ESE | ..... | 11$^{h}$ 30$^{m}$ ☽ true |
| | Midn$^{t}$ | | 42 30 | −26½ | ..... | 17 57,5 | moderate | Hazy | South |
| Mar. 4th | 0 10 | A. M. | 42 30 | −26½ | ..... | ..... | ESE | Overcast | |
| | 0 35 | | 42 30 | −26½ | | | Squally | with drift | |
| | 1 20 | | 42 30 | −26½ | ..... | 17 55,6 | | | |
| | 1 55 | | 42 30 | −26 | ..... | 17 56,7 | | | |
| | 2 20 | | 42 30 | −26 | | | | | |
| | 2 50 | | 42 40 | −26 | ..... | 17 57,4 | | | |
| | 3 10 | | 42 40 | −26½ | | | | | |
| | 3 55 | | 43 00 | −26½ | ..... | 17 57 | | | |
| | 5 12 | | 43 40 | −27 | ..... | 17 57,8 | | | |
| | − 6 6 | | 40 30 | −27 | ..... | 18 3,0 | Easterly | Clear and | |
| | 7 8 | | 41 40 | −27 | ..... | 18 1,2 | Light | Fine | |
| | 7 50 | | 42 50 | −27 | ..... | 18 2,6 | | | |
| | 9 00 | | 40 30 | −27 | ..... | 18 2,3 | | | |
| | 9 40 | | 41 40 | −26½ | ..... | 17 56 | | | |
| | 10 10 | | 44 00 | −26½ | ..... | ..... | Calm | Clear and | |
| | 10 25 | | 45 00 | −26 | | | | Fine | |

## North end of Needle to the S. W.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m, | | ° ′ | ° | | m. s. | | | |
| Mar. 4th | 10 40 | A. M. | S 45 00W | —26 | | | | | |
| | 11 5 | | 45 20 | —26 | .. .. | 17 59,7 | | | |
| | 11 10 | | 46 20 | —26 | | | | | |
| | 11 50 | | 46 20 | —26 | | | | | |
| | 0 30 | P. M. | 47 10 | —26 | .. .. | 17 56,3 | | | |
| | 1 00 | | 47 20 | —25 | .. .. | 17 51,8 | | | |
| | 2 00 | | 47 40 | —25 | .. .. | 17 50,5 | Calm | Ditto | *Max. westerly variation.* |
| | 2 5 | | 50 00 | —25 | To the left hand. | | | | |
| + | 2 10 | | 50 25 | —25 | | | | | |
| | 2 35 | | 50 25 | —25 | | | | | |
| | 2 38 | | 49 30 | —25 | | | | | |
| | 3 00 | | 49 5 | —25 | ..... | 17 50 | | | |
| | 3 32 | | 47 40 | —25 | | | | | |
| | 4 00 | | 47 00 | —25 | ..... | 17 56,2 | | | |
| | 4 5 | | 46 30 | —25 | ..... | ..... | Easterly Light | Fine clear weather | |
| | 4 7 | | 46 00 | —25 | | | | | |
| | 5 10 | | 45 10 | —25 | ..... | 17 58,5 | | | |
| | 6 3 | | 45 5 | —26 | ..... | 17 54,3 | | | |
| | 7 6 | | 45 0 | —26 | ..... | 17 55,9 | | | |
| | 7 50 | | 45 0 | —27 | ..... | 17 53,3 | | | |
| | 9 00 | | 44 50 | —26½ | ..... | 17 49 | | | |
| — | 9 30 | | 44 40 | —27 | | | | | |
| | 10 10 | | 44 50 | —27 | ..... | 17 45,6 | Easterly Light | Veryclear and fine | *Max. easterly variation.* |
| | 10 50 | | 44 50 | —27½ | ..... | 17 50,7 | | | |
| | 11 30 | | 44 50 | —27½ | | | | | |
| | 11 56 | | 44 50 | —27½ | ..... | 17 55,8 | | | |

## North end of Needle to the N. W.

In this case, the ends of the magnets nearest the needle were 29,4 inches from the centre of the compass-box, and the time of performing one vibration by the needle thus circumstanced was 14,4 seconds, so that the directive force now, was to the undiminished force as 0,15 to 1.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mar. 5th | 2 10 | A. M. | N 48 00W | —26 | .. .. | 17 58 | Easterly Light | Hazy | |
| | 2 30 | | 48 00 | —26 | | | | | |
| | 3 00 | | 48 10 | —26 | .. .. | 17 59,3 | | | |
| | 3 10 | | 49 10 | —26 | | | | | |
| | 3 15 | | 50 00 | —26 | | | | | |
| | 3 20 | | 50 30 | —26 | | | | | |
| | 4 00 | | 51 30 | —26 | .. .. | 18 7 | | | |
| | 5 10 | | 52 00 | —26 | .. .. | 18 0,5 | Westerly moderate | Thick & Hazy | |
| | 6 6 | | 51 30 | —26 | .. .. | 17 59,8 | | | |
| | 7 6 | | 51 30 | —26 | ..... | 18 5,0 | | | |
| + | 7 50 | | 52 00 | —26 | ..... | 18 1,8 | | | |
| | 9 30 | | 50 10 | —25½ | ..... | 17 55,5 | | | |
| | 10 30 | | 49 00 | —26 | ..... | 17 51,2 | Calm | Clear and fine | *Max. westerly variation.* |
| | 11 00 | | 48 40 | —26 | ..... | 17 52,3 | | | |
| | 11 30 | | 49 00 | —26 | | | | | |
| | 11 35 | | 48 30 | —26 | | | | | |
| | Noon | | 47 00 | —25½ | ..... | 17 48,5 | | | |

## North end of Needle to the N. W.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 5th | 1 00 | P. M. | N 46 00W | —25½ | ..... | 17 53,4 | | | |
| | 1 30 | | 45 40 | —24½ | | | | | |
| | 2 00 | | 45 40 | —24½ | ..... | 17 57,2 | | | |
| | 2 30 | | 46 10 | —24½ | ..... | ..... | Westerly | Clear and | *Max. easterly variation.* |
| | 3 00 | | 46 10 | —25 | ..... | 17 54,5 | Light | Fine | |
| | 3 20 | | 44 00 | —25 | | | | | |
| | — 3 50 | | 43 50 | —25 | ..... | 17 53,8 | ..... | ..... | |
| | 4 55 | | 44 00 | —26 | ..... | 17 58 | | | |
| | 6 5 | | 44 00 | —27 | ..... | 17 55,2 | Calm | Fine and Clear | |
| | 6 45 | | 44 00 | —27 | ..... | 17 54 | | | |
| | 7 40 | | 44 20 | —27 | ..... | 17 55,9 | Easterly | Cloudy | |
| | 9 10 | | 45 20 | —26½ | ..... | 17 52,8 | Light | | |
| | 9 32 | | 45 20 | —27 | | | | | ☽ rising S. W. by W. by compass. |
| | 9 58 | | 45 30 | —27 | ..... | 17 53,7 | | | |
| | 10 30 | | 45 45 | —27 | | | | | |
| | 11 4 | | 45 35 | —27 | ..... | 17 54,8 | ..... | ..... | |
| | 11 27 | | 45 30 | —27 | ..... | ..... | South | Hazy | ☽ W ½ N. (compass). |
| | Midnᵗ | | 45 30 | —27 | ..... | 17 55,9 | moderate | ..... | |
| Mar. 6th | 1 10 | A. M. | 46 00 | —27 | ..... | 17 57,3 | Ditto | Hazy | ☽ W N W (compass). |
| | 1 50 | | 46 10 | —27 | ..... | 17 56,8 | | | |
| | 2 30 | | 46 30 | —27 | | | | | |
| | 3 00 | | 48 50 | —27 | ..... | 18 6 | | | * Needle was observed to oscillate quickly in small arcs, and about this time also, rapid changes in the intervals of the times of vibrations of the horizontal needle took place. |
| | 3 25 | | 49 30 | —26½ | | | | | |
| | 3 40 | | 51 00 | —26½ | | | | | |
| | 3 50 | | 52 30 | —26½ | | | | | |
| | 3 55 | | 53 20 | —26½ | .. To the right hand. .. | 18 9,5 | | | |
| | 5 5 | | 54 00* | —25 | .. .. | 18 4 | South | | |
| | + 6 10 | | 60 00 | —24 | .. .. | 18 9,2 | Squally | Hazy | |
| | 7 5 | | 52 30 | —23 | .. .. | 18 2 | | | *Max. westerly variation.* |
| | 7 53 | | 54 00 | —23 | .. .. | 18 3 | | | |
| | 9 00 | | 57 20 | —23 | | | | | |
| | 9 5 | | 57 00 | —23 | | | | | |
| | 9 40 | | 58 10+ | —23 | | | | | |
| | 9 45 | | 57 30 | —23 | | | | | |
| | 10 00 | | 50 00 | —23 | ..... | 18 1 | | | |
| | 10 30 | | 49 10 | —23 | ..... | ..... | South | Overcast | |
| | 10 50 | | 51 30 | —23 | | | Fresh | | |
| | 11 00 | | 53 20 | —23 | ..... | 18 1,5 | | | |
| | 11 5 | | 54 30 | —23 | | | | | |
| | 11 10 | | 55 30 | —23 | | | | | |
| | 11 15 | | 55 40 | —23 | | | | | |
| | 11 29 | | 54 30 | —23 | ..... | ..... | S Westˡʸ | Thick | Immediately after 11ʰ 29ᵐ A. M. the needle went rapidly towards the north, at which time, also, it was observed that a considerable increase in the horizontal intensity took place. |
| | 11 31 | | 50 30 | —23 | | | Fresh | with drift | |
| | Noon. | | 49 10 | —23 | ..... | 17 49,5 | | | |
| | 0 5 | P. M. | 47 00 | —23 | | | | | |
| | 0 30 | | 46 55 | —23 | | | | | |
| | 1 2 | | 46 45 | —23 | ..... | 17 50 | Ditto | Clear | |
| | 1 27 | | 46 00 | —23 | | | | | |
| | 1 55 | | 45 55 | —23 | ..... | 17 54,7 | | | |
| | — 2 53 | | 45 00 | —24 | ..... | 17 54,9 | | | |

## North end of Needle to the N. W.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 6th | 3 20 | P. M. | N 45 00W | —24 | ..... | ..... | ..... | ..... | |
| | 3 45 | | 45 00 | —25 | ..... | 17 54,5 | S W mod. | Hazy | |
| | 5 15 | | 45 40 | —27 | ..... | 17 52,5 | | | |
| | 5 50 | | 45 50 | —27 | | | | | |
| | 6 15 | | 46 00 | —27 | ..... | 17 51,8 | West | | |
| | 6 50 | | 46 00 | —27 | ..... | ..... | Mod. | Hazy | |
| | 7 15 | | 46 10 | —28 | ..... | 17 52,3 | | | |
| | 7 50 | | 46 10 | —29 | ..... | 17 52,7 | | | |
| | 8 54 | | 46 00 | —29 | ..... | 17 56,5 | | | |
| | 9 15 | | 45 50 | —29½ | | | | | |
| | 9 45 | | 46 00 | —30 | | | | | |
| | 10 5 | | 46 00 | —30 | ..... | 17 56,7 | Ditto | Ditto | *Max. easterly variation.* |
| | 10 58 | | 46 10 | —30½ | ..... | 17 54.5 | Stars scarcely visible through the haze. | | |
| | 11 50 | | 46 10 | —31½ | ..... | 17 56,3 | | | |
| Mar. 7th | 1 10 | A. M. | 46 30 | —31 | ..... | 17 55,6 | Westerly | Very hazy | |
| | 2 3 | | 47 30 | —31 | ..... | 17 56,5 | Mod. | | |
| | 3 0 | | 48 00 | —31 | .. .. | 17 56,6 | | | |
| | 3 53 | | 48 30 | —31 | .. .. | 18 0,4 | | | |
| | 5 10 | | 49 10 | —31 | .. .. | 17 55,2 | | | |
| | 5 40 | | 50 20 | —31 | | | | | |
| | 6 10 | | 50 30 | —31½ | .. .. | 17 59,7 | | | |
| | 6 50 | | 50 50 | —31½ | .. .. | 17 57,5 | | | |
| | 7 15 | | 50 50 | —31½ | .. .. | ..... | North | Hazy | |
| | 7 50 | | 51 00 | —31½ | .. .. | 17 56,1 | Light | | |
| | 9 5 | | 50 40 | —31½ | ..... | 17 59,8 | | | |
| | + 10 0 | | 51 10 | —30½ | ..... | 17 57 | ..... | ..... | *Max. westerly variation.* |
| | 10 35 | | 51 10 | —30½ | | | | | |
| | 10 40 | | 51 00 | —30 | ..... | ..... | Calm | Clear and fine weather, a few thin clouds near the horiz. | |
| | 11 10 | | 51 00 | —30 | ..... | 17 56,2 | | | |
| | 11 30 | | 50 55 | —30 | | | | | |
| | 0 5 | P. M. | 50 50 | —30 | ..... | 17 55,8 | N W light | | |
| | 0 7 | | 50 00 | —30 | | | | | |
| | 0 9 | | 49 40 | —30 | | | | | |
| | 0 20 | | 49 30 | —30 | | | | | |
| | 1 10 | | 49 20 | —29½ | ..... | 17 53,3 | | | |
| | 1 40 | | 48 30 | —29 | | | | | |
| | 1 55 | | 47 50 | —28½ | ..... | 17 50,5 | | | |
| | 2 20 | | 47 40 | —28½ | | | | | |
| | 2 50* | | 47 40 | —28½ | | | | | |
| | 3 10 | | 47 40 | —28½ | ..... | 17 53,4 | | | |
| | 3 58 | | 47 30 | —28½ | ..... | 17 53,2 | | | |
| | 5 5 | | 47 40 | —29 | ..... | 17 55,8 | Easterly | Very fine | |
| | 6 5 | | 47 50 | —29 | ..... | 17 54,6 | Light | and clear | |
| | 7 3 | | 48 00 | —30 | ..... | 17 55,6 | | | |
| | — 7 52 | | 47 20 | —30 | ..... | 17 54,5 | ..... | ..... | *Max. easterly var.* happ$^{nd}$ at 2$^h$ 50$^m$ A. M. on the 8th. |
| | 9 5 | | 47 20 | —30 | ..... | 17 55,5 | | | |
| | 9 42 | | 47 40 | —30 | | | | | |
| | 10 00 | | 48 00 | —30 | ..... | 17 55 | Easterly | Hazy | |
| | 11 00 | | 48 30 | —30 | ..... | 17 55,7 | Mod. | | |
| | 11 30 | | 48 30 | —30 | | | | | |
| | Midn$^t$ | | 48 20 | —30 | ..... | 17 56 | ..... | Very thick weather | |

To the right hand.

## North end of Needle to the W. S. W.

In this position, both magnets were placed to the south of the compass; the north pole of one magnet, and the south pole of the other, were directed towards the needle, so as to attract each extremity; the distance from the centre of the box, to the end of the magnet attracting the north end of the needle, was 18,65 inches, and to that attracting the south end of the needle, 28,4 inches; the needle then made 1 vibration in 8,6 seconds, so that, the directive force was reduced in the ratio of 0,42 to 1.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrent. / Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 14th | 1 5 | A. M. | S 68 30W | —26 | ..... | 17 58,5 | Calm | Fine and clear, star light | *Max. easterly variation.* |
| | 2 0 | | 68 30 | —27 | ..... | 17 58,5 | | | |
| | 2 20 | | 68 30 | —27 | | | | | |
| | 2 50 | | 68 30 | —27 | | | | | |
| | 3 10 | | 68 30 | —27 | ..... | 18 1,2 | | | |
| | 3 55 | | 68 30 | —27 | ..... | 18 3,9 | | | |
| | 5 10 | | 70 50 | —27 | ..... | 18 00 | | | |
| | 5 50 | | 70 10 | —27 | | | | | |
| | 6 5 | | 69 20 | —27 | .. To the left hand. .. | 18 4,2 | | | |
| | 7 00 | | 69 35 | —27½ | .. .. | 18 2,3 | | | |
| | 7 30 | | 69 20 | —27½ | | | | | |
| — | 8 00 | | 68 20 | —27½ | .. .. | 18 7,8 | | | |
| | 9 00 | | 68 20 | —27½ | .. .. | 18 19 | | | |
| | 9 40 | | 68 40 | —27½ | | | | | |
| | 10 30 | | 69 00 | —27½ | .. .. | 18 10,2 | | | |
| | 10 45 | | 68 20 | —25 | | | | | |
| | 11 00 | | 68 30 | —25 | ..... | 18 9,3 | | | |
| | 11 40 | | 69 00 | —25 | ..... | ..... | Easterly | Clear and | |
| | Noon | | 71 15 | —25 | ..... | 17 59,5 | Light | fine | |
| | 0 30 | P. M. | 71 50 | —23 | ..... | ..... | Easterly | Clear and | *Max. westerly variation.* |
| | 0 35 | | 72 00 | —23 | | | Light | fine | |
| | 0 40 | | 71 55 | —23 | | | | | |
| | 0 45 | | 72 00 | —23 | | | | | |
| | 0 50 | | 72 30 | —23 | | | | | |
| | 1 00 | | 72 30 | —23 | ... .... | 17 53,0 | | | |
| | 1 10 | | 73 00 | —23 | | | | | |
| | 1 20 | | 73 30 | —23 | | | | | |
| | 1 30 | | 74 30 | —22½ | | | | | |
| | 1 35 | | 75 00 | —22½ | | | | | |
| | 1 45 | | 75 30 | —22½ | | | | | |
| | 2 00 | | 75 30 | —22 | .. .. | ..... | Calm | Clear and | |
| | 2 5 | | 75 40 | —22 | .. .. | 17 48 | | fine | |
| | 2 7 | | 76 00 | —22 | | | | | |
| | 2 15 | | 76 15 | —22 | | | | | |
| | 2 20 | | 76 30 | —22 | | | | | |
| | 2 30 | | 76 50 | —22½ | | | | | |
| + | 2 40 | | 77 00 | —22½ | ..... | ..... | ..... | ..... | |
| | 3 5 | | 77 00 | —22½ | ..... | 17 52,7 | | | |
| | 3 27 | | 76 55 | —22½ | | | | | |

## North end of Needle to the W. S. W.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 14th | 4 26 | P. M. | S 76 20W | —22½ | ..... | 17 54,7 | | | |
| | 4 30 | | 76 15 | —22½ | | | | | |
| | 5 00 | | 75 00 | —23 | ..... | 17 52,1 | | | |
| | 5 30 | | 74 10 | —23 | | | | | |
| | 5 45 | | 74 00 | —23½ | | | | | |
| | 6 00 | | 73 30 | —23½ | ..... | 17 54,5 | | | |
| | 6 10 | | 73 00 | —23½ | | | | | |
| | 6 30 | | 72 50 | —24½ | | | | | |
| | 7 12 | | 72 40 | —25½ | ..... | 17 53,1 | Calm | Clear and fine | |
| | 7 50 | | 72 40 | —25 | ..... | 17 55,8 | | | |
| | 9 25 | | 72 50 | —27 | ..... | 17 58 | | | |
| | 10 20 | | 72 50 | —27 | ..... | 17 53,5 | | | |
| | 11 50 | | 72 50 | —27 | ..... | 17 56,3 | | | |
| Mar. 15th | 1 00 | A. M. | 72 40 | —27 | ..... | 17 56,7 | Calm | Clear and fine | |
| | 1 32 | | 72 30 | —27 | | | | | |
| | 1 56 | | 72 15 | —27 | ..... | 17 57,7 | | | |
| | 2 50 | | 72 00 | —27 | ..... | 17 59,3 | | | |
| | 3 30 | | 71 40 | —27 | | | | | |
| | 3 55 | | 71 30 | —27 | ..... | 18 3,2 | | | |
| | 4 25 | | 71 30 | —27 | | | | | |
| | — 5 6 | | 70 50 | —28 | ..... | 18 0,7 | ..... | ..... | *Max. casterly var.* |
| | 5 30 | | 70 50 | —28 | | | | | |
| | 6 00 | | 70 50 | —27½ | ..... | 17 58,2 | | | |
| | 6 50 | | 70 50 | —27½ | | | | | |
| | 7 15 | | 70 50 | —27½ | ..... | 17 55,8 | | | |
| | 7 30 | | 71 00 | —27½ | ..... | 17 59,8 | | | |
| | 9 10 | | 71 00 | —27 | ..... | 17 58,6 | N.wester Light | Hazy | |
| | 9 42 | | 71 00 | —26 | | | | | |
| | 10 15 | | 71 35 | —25 | .. To the left hand. .. | 17 57 | | | |
| | 10 40 | | 71 50 | —24½ | | | | | |
| | 11 14 | | 72 20 | —24 | .. .. | 17 57,8 | | | |
| | Noon | | 73 10 | —23 | .. .. | 17 59,5 | | | |
| | 0 35 | P. M. | 73 00 | —23 | | | | | |
| | 1 00 | | 73 00 | —23 | .. .. | 17 57,1 | | | |
| | 1 30 | | 72 40 | —23 | | | | | |
| | 1 40 | | 73 00 | —23 | | | | | |
| | 2 00 | | 73 00 | —22½ | ..... | 17 55,2 | | | |
| | 2 30 | | 73 10 | —22½ | | | | | |
| | 2 45 | | 73 00 | —22 | | | | | |
| | 3 30 | | 73 10 | —22 | ..... | 17 52,2 | N.wester Light | ..... | Parhelion on each side of ⊙. |
| | 3 50 | | 74 45 | —22 | | | | | |
| | 4 30 | | 75 10 | —22½ | ..... | 17 50,1 | | | |
| | + 5 00 | | 76 00 | —22½ | ..... | 17 45,3 | ..... | ..... | *Max. westerly variation.* |
| | 5 15 | | 76 00 | —22½ | | | | | |
| | 5 30 | | 76 00 | —23 | ..... | 17 47,1 | | | |
| | 6 30 | | 76 00 | —23½ | | | | | |
| | 7 15 | | 76 00 | —23½ | ..... | 17 50,1 | | | |
| | 8 10 | | 76 00 | —23½ | ..... | 17 50,3 | N. W. Mod. | Hazy | *Max. easterly variation.* |
| | 9 00 | | 75 55 | —23½ | ..... | 17 53 | | | |
| | 9 30 | | 75 40 | —23½ | | | | | |

## North end of Needle to the W. S. W.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fabrent. Inst. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibs. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 15th | 10 10 | P. M. | S 75 50W | —24 | ..... | 17 55 | | | |
| | 11 00 | | 75 40 | —24 | ..... | 17 56,7 | | | |
| | 11 46 | | 75 40 | —24 | ..... | 17 56,5 | | | |
| Mar. 16th | 1 20 | A. M. | 74 5 | —24 | ..... | 17 57,5 | | | |
| | 1 50 | | 74 00 | —24 | ..... | 17 57,7 | N Westy. Mod. | Hazy low down | |
| | 2 30 | | 73 10 | —24½ | | | | | |
| | 3 00 | | 73 50 | —24½ | ..... | 18 00,3 | | | |
| | 3 45 | | 73 40 | —24½ | ..... | 17 58 | | | |
| | 5 5 | | 72 30 | —24½ | ..... | 18 0,2 | | | |
| | 5 50 | | 72 10 | —25 | ..... | 17 58 | Squally | | |
| | 6 20 | | 72 10 | —25 | | | | | |
| | 7 10 | | 72 00 | —24½ | ..... | 18 0,2 | | | |
| | 7 25 | | 71 55 | —24½ | ..... | 18 0,6 | | | |
| | 9 00 | | 71 40 | —24½ | ..... | 18 1,5 | | | |
| | 9 30 | | 71 30 | —24½ | | | | | |
| | 10 00 | | 71 30 | —24 | ..... | 18 1,5 | | | |
| | —10 30 | | 71 20 | —24 | | | | | |
| | 11 00 | | 71 30 | —24 | ..... | 18 1,8 | | | |
| | 11 20 | | 71 40 | —24 | ..... | ..... | ..... | ..... | It will be seen that the *max. deflections* of this needle, took place about the same time that a decrease & increase of intensity in the directive force of the horizontal needle took place. |
| | 11 30 | | 71 30 | —24 | | | | | |
| | Noon | | 71 30 | —23 | ..... | 17 56,6 | | | |
| | 0 5 | P. M. | 72 00 | —23 | | | | | |
| | 0 15 | | 73 00 | —23 | | | | | |
| | 0 30 | | 73 00 | —23 | | | | | |
| | 0 45 | | 72 30 | —23 | | | | | |
| | 1 00 | | 72 30 | —23 | ..... | 17 57 | | | |
| | 1 15 | | 72 40 | —23 | | | | | |
| | 1 30 | | 73 20 | —23 | | | | | |
| | 1 45 | | 73 30 | —23 | | | | | |
| | 2 00 | | 73 30 | —23 | .. .. | 17 58,8 | | | |
| | 2 10 | | 73 20 | —23 | .. .. | ..... | ..... | ..... | *Max. westerly var.* |
| | 2 30 | | 73 30 | —23 | .. .. | ..... | N W Mod. | Hazy | |
| | 2 56 | | 73 30 | —23 | To the left hand. | | | | |
| | 3 15 | | 73 30 | —23 | .. .. | 17 54,2 | | | |
| | 3 40 | | 74 20 | —23 | | | | | |
| | 5 15 | | 75 10 | —23½ | ..... | 17 50,7 | | | |
| | 5 45 | | 75 15 | —23½ | ..... | 17 46,6 | | | |
| | + 6 20 | | 75 30 | —23½ | ..... | 17 45,3 | | | |
| | 6 45 | | 75 30 | —24 | | | | | |
| | 7 15 | | 75 30 | —24 | ..... | 17 46,9 | | | |
| | 7 55 | | 74 40 | —24 | ..... | 17 48,8 | | | |
| | 9 5 | | 73 30 | —24½ | ..... | 17 54,5 | | | |
| | 9 50 | | 73 25 | —24½ | | | | | |
| | 10 20 | | 73 00 | —24½ | ..... | 17 55,7 | | | |
| | 11 00 | | 72 30 | —24½ | ..... | 17 55,8 | | | |
| | 11 30 | | 72 00 | —24½ | ..... | ..... | Fresh | | |
| | Midt | | 72 00 | —24½ | ..... | 17 56,7 | NNW | Hazy | |

## North end of Needle to the S 85° W. The line of minimum daily variation.

The distance of the nearest end of each magnet placed to the South, from the centre of the compass-box, was, of that attracting the North end of the needle 18,6 inches, and of the other attracting the South end of the needle 27,15 inches: under this adjustment, the needle made one vibration in 10,2 seconds, so that the directive power now, was to the undiminished force as 0,31 to 1. nearly.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 23d | 6 30 | A. M. | S 83 30W | —26 | ..... | 18 2 | | | *Max. easterly var.* took place at $2^h\ 5^m$ A. M. |
| | 7 10 | | 83 30 | —26 | ..... | 18 2,2 | | | |
| | 7 30 | | 83 30 | —26 | | | | | |
| | 7 55 | | 83 30 | —26 | ..... | 18 1,5 | | | |
| | + 9 8 | | 83 20 | —26 | ..... | 18 10,7 | | | |
| | 9 30 | | 83 30 | —26 | | | | | |
| | 10 10 | | 83 30 | —23 | ..... | 18 10,5 | | | |
| | 10 30 | | 83 30 | —22 | | | | | |
| | 11 18 | | 83 30 | —22 | ..... | 18 9,3 | | | |
| | 11 50 | | 83 30 | —21 | | | | | |
| | 0 4 | P. M. | 83 40 | —21 | ..... | 18 3 | | | |
| | 0 45 | | 83 50 | —20½ | | | | | |
| | 1 5 | | 84 20 | —20½ | ..... | 17 52,8 | | | |
| | 2 5 | | 84 20 | —20 | ..... | 17 53,9 | .. Calm, clear and fine weather throughout the day. .. | ..... | *Max. westerly var.* |
| | 2 45 | | 85 00 | —19½ | | | | | |
| | 3 5 | | 85 00 | —19½ | ..... | 17 56,5 | | | |
| | 3 25 | | 85 00 | —19½ | | | | | |
| | 3 55 | | 85 00 | —19½ | ..... | 17 58,4 | | | |
| | 4 45 | | 85 5 | —19½ | ..... | 17 55,6 | | | |
| | 5 20 | | 85 00 | —21 | | | | | |
| | 6 00 | | 85 00 | —22 | ..... | 17 50,5 | | | |
| | 6 20 | | 85 00 | —23 | | | | | |
| | 7 00 | | 85 10 | —23½ | ..... | 18 1,8 | | | |
| | 7 35 | | 85 20 | —24 | | | | | |
| | 7 55 | | 85 20 | —24 | ..... | 17 56,7 | | | |
| | 9 00 | | 86 00 | —24 | ..... | 18 0,2 | | | |
| | — 9 15 | | 86 20 | —24 | | | | | |
| | 9 40 | | 86 00 | —24 | ..... | 17 58,5 | | | |
| | 11 00 | | 86 15 | —25 | ..... | 17 59 | | | |
| | Midnr | | 85 50 | —26½ | ..... | 17 59 | | | |
| Mar. 24th | 1 00 | A. M. | 85 40 | —26½ | ..... | 18 00,8 | | | |
| | 1 30 | | 84 40 | —26½ | ..... | ..... | Calm | Clear and fine | *Max. easterly var.* |
| | 2 00 | | 85 00 | —27 | .. To the right hand. .. | 18 2,5 | | | |
| | 2 30 | | 85 00 | —27 | | | | | |
| | 2 40 | | 84 00 | —27 | | | | | |
| | 2 50 | | 83 50 | —26½ | .. .. | 18 2,5 | Easterly Light | Ditto | |
| | 3 20 | | 83 40 | —27 | | | | | |
| | 3 55 | | 83 40 | —27 | .. .. | 12 4,1 | | | |
| | 6 00 | | 83 40 | —27 | .. .. | 18 5,8 | | | |
| | 6 57 | | 83 50 | —27 | .. .. | 17 54,7 | Calm | Clear and fine | |

North end of needle to the S. 85° W. The line of min. daily variation.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weatber. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 24th | 7 50 | A. M | S 83 50W | —27 | .. .. | 18 2 | | | |
| | 9 6 | | 83 50 | —26 | .. .. | 18 00 | | | |
| | 9 30 | | 83 35 | —26 | .. .. | 18 0,7 | ..... | ..... | *Max. westerly var.* |
| | 9 55 | | 83 35 | —26½ | .. .. | 18 6,9 | | | |
| | + 10 20 | | 83 30 | —26 | .. .. | ..... | | | |
| | 10 50 | | 83 30 | —24½ | | | | | |
| | 11 00 | | 83 40 | —24½ | .. .. | 17 56 | | | |
| | 11 30 | | 84 00 | —23½ | Very little motion. | | | | |
| | Noon | | 84 20 | —23½ | ..... | 17 49,1 | | | |
| | 0 15 | P. M. | 84 30 | —23½ | | | | | |
| | 0 35 | | 84 40 | —22½ | | | | | |
| | 1 40 | | 84 40 | —22 | ..... | 17 55,7 | Easterly Light | Fine | |
| | 2 10 | | 84 55 | —22 | | | | | |
| | 2 50 | | 85 00 | —22 | ..... | 17 57 | | | |
| | 3 10 | | 85 00 | —22 | | | | | |
| | 3 42 | | Ditto | —22 | | | | | |
| | 4 11 | | ..... | —22 | ..... | 17 59,5 | | | |
| | 5 00 | | ..... | —23 | ..... | 17 54,5 | | | |
| | 5 50 | | ..... | —24 | ..... | 17 52,2 | | | |
| | 7 30 | | ..... | —24 | | | | | |
| | 8 00 | | ..... | —25 | ..... | 17 55 | | | |
| | 8 30 | | ..... | —25 | .... ... | 17 50,2 | | | |
| | 8 52 | | ..... | —26 | ..... | 17 53,2 | | | |
| | 9 30 | | ..... | —26½ | | | | | |
| | 9 55 | | ..... | —27 | ..... | 17 58,9 | | | |
| | 10 15 | | ..... | —27 | | | | | |
| | 10 30 | | .. .. | —27½ | ..... | ..... | Ditto | Ditto | |
| | 11 10 | | .. .. | —27½ | ..... | 18 1,4 | | | |
| | Midnᵗ | | .. .. | —27 | ..... | 18 1,1 | | | |
| Mar. 25th | 0 30 | A. M. | .. .. | —27 | | | | | |
| | 1 6 | | .. .. | —27 | ..... | 18 0,8 | ..... | ..... | *Max. easterly var.* |
| | 1 45 | | .. .. | —27 | ..... | 17 55,8 | | | |
| | 2 10 | | .. .. | —27 | | | | | |
| | 2 42 | | .. .. | —27 | ..... | 17 57,5 | | | |
| | 3 32 | | .. .. | —27 | | | | | |
| | 4 00 | | .. .. | —27 | ..... | 17 59,5 | | | |
| | 4 28 | | .. .. | —27 | | | | | |
| | 5 40 | | .. .. | —29½ | ..... | 17 57,2 | | | |
| | 6 57 | | .. .. | —29 | ..... | 17 54,8 | | | |
| | 8 2 | | .. .. | —28 | ..... | 17 57,9 | | | |
| | 8 50 | | .. .. | —28 | ..... | 17 58,5 | | | |
| | 9 12 | | .. .. | —28 | .. .. | 17 59,5 | | | |
| | 9 50 | | ..... | —28 | .. .. | ..... | .. .. | ..... | *Max. westerly var.* |
| | 10 14 | | ..... | —26½ | .. .. | 18 0,8 | | | |
| | 11 00 | | ..... | —26½ | .. .. | 17 58,3 | | | |
| | 11 30 | | ..... | —26 | | | | | |
| | Noon | | ..... | —26 | .. .. | 17 59,3 | | | |
| | 0 30 | P. M. | ..... | —26 | | | | | |
| | 0 55 | | ..... | —26 | .. .. | 17 59,8 | | | |
| | 1 30 | | ..... | —25 | | | | | |

No perceptible motion these 24 hours.

Line of min. effect.

Light easterly winds and clear weather.

North end of needle to the S 85° W. The line of min. daily variation.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 25th | 1 55 | P. M. | S 85 00W | —24 | ..... | 17 54,9 | | | |
| | 2 45 | | ..... | —23½ | ..... | 17 55,7 | | | |
| | 3 15 | | ..... | —23½ | ..... | ..... | ..... | ..... | *Max. easterly var.* |
| | 3 50 | | ..... | —23½ | ..... | 17 56,7 | | | |
| | 4 50 | | ..... | —23½ | ..... | 17 54,3 | | | |
| | 6 00 | | ..... | —26 | ..... | 17 56,9 | | | |
| | 6 50 | | ..... | —26 | ..... | 17 56,2 | | | |
| | 7 36 | | ..... | —26 | | | | | |
| | 8 30 | | ..... | —26½ | ..... | 17 57 | | | |
| | 9 00 | | ..... | —26½ | ..... | 17 57,5 | | | |
| | 10 00 | | ..... | —26½ | ..... | 17 56,3 | | | |
| | 11 00 | | ..... | —27 | ..... | 17 57,8 | | | |
| | 11 50 | | ..... | —27 | ..... | 17 58,3 | | | |
| Mar. 26th | 1 7 | A. M. | ..... | —26½ | ..... | 17 57,7 | N. W. | Hazy | |
| | 1 50 | | ..... | —26 | ..... | 17 58,2 | Fresh | | |
| | 2 15 | | ..... | —26 | | | | | |
| | 3 00 | | ..... | —26 | ..... | 17 59,7 | | | |
| | 4 00 | | .. No perceptible motion. .. | —26 | .. Line of minimum effect. .. | 17 59,4 | | | |
| | 4 50 | | .. .. | —27 | .. .. | 18 2,0 | ..... | Squally | |
| | 6 00 | | .. .. | —26 | .. .. | 18 3,2 | | | |
| | 7 00 | | .. .. | —26 | .. .. | 18 3,7 | | | |
| | 7 40 | | .. .. | —26 | .. .. | 18 5,0 | | | |
| | 9 00 | | .. .. | —24 | | | | | |
| | 10 00 | | .. .. | —24 | .. .. | 18 7,5 | | | |
| | 10 25 | | .. .. | —24 | .. .. | ..... | ..... | ..... | *Max. westerly var.* |
| | 11 2 | | .. .. | —23 | .. .. | 17 59 | | | |
| | 11 30 | | .. .. | —23 | | | | | |
| | Noon | | ..... | —21½ | .. .. | 17 58,8 | North | | |
| | 0 30 | P. M. | ..... | —22½ | | | Mod. | Hazy | |
| | 1 10 | | ..... | —22 | ..... | 17 52,5 | | | |
| | 1 50 | | ..... | —22 | ..... | 17 52,3 | | | |
| | 2 55 | | ..... | —21¾ | ..... | 17 57,6 | | | |
| | 3 50 | | ..... | —22 | ..... | 17 58 | | | |
| | 5 15 | | ..... | —22½ | ..... | 17 53,3 | North | | |
| | 5 50 | | ..... | —22½ | | | Squally | | |
| | 6 20 | | ..... | —22½ | ..... | 17 54,5 | | | |
| | 7 10 | | ..... | —23 | ..... | 17 57,4 | | | |
| | 7 50 | | ..... | —23 | ..... | 17 56,7 | | | |
| | 9 5 | | ..... | —23 | ..... | 17 58,2 | | | |
| | 9 50 | | ..... | —23 | ..... | 17 57,2 | | | |
| | 10 50 | | ..... | —23 | ..... | 17 59,5 | North | Clear | |
| | 11 47 | | ..... | —23 | ..... | 17 59,8 | Fresh | | |
| Mar. 27th | 1 00 | A. M. | ..... | —23 | ..... | 18 1,0 | ..... | Hazy | |
| | 1 30 | | ..... | —23 | | | | | |
| | 1 55 | | ..... | —23 | ..... | 18 3 | | | |
| | 2 45 | | ..... | —23 | | | | | |
| | 3 50 | | ..... | —23 | ..... | 18 4,2 | | | |
| | 5 15 | | ..... | —23 | ..... | 17 58,9 | ..... | ..... | *Max. easterly var.* |
| | 5 50 | | ..... | —23 | ..... | 18 00 | Ditto | Clear | |
| | 6 20 | | ..... | —22 | | | | | |

North end of needle to the S. 85° W. The line of min. daily variation.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| | h. m. | | S 85° 00′ W | ° | | m. s. | | | |
| Mar. 27th | 7 10 | A. M. | | —22 | | 17 59,3 | | | |
| | 9 00 | | | —21 | | 17 57,3 | | | |
| | 9 30 | | | —21 | | 18 5,5 | | | |
| | 10 10 | | | —21 | | 18 4,7 | ..... | Hazy | |
| | 10 45 | | | —20 | | 18 4,2 | | with snow | |
| | 0 10 | P. M. | | —20 | | 18 3,7 | | | |
| | 1 30 | | No perceptible motion whatever. | —18 | Line of min. effect. | 17 57,2 | ..... | ..... | *Max. westerly var.* |
| | 2 10 | | | —18 | | 17 53,7 | | | |
| | 3 15 | | | —18½ | | 17 55,5 | | | |
| | 3 50 | | 85 30 | —18½ | | 17 56,5 | | | |
| | | | | —18½ | | | | | |
| | 7 00 | | 86 00 | —20 | | 17 57,8 | ..... | ..... | Tried the electrometer, but no effects of electricity were observed by the gold leaf. |
| | 9 12 | | 86 30 | —20 | | 17 55,3 | | | |
| | 9 35 | | 86 20 | —20 | | ..... | Westerly | Hazy | |
| | 10 2 | | 86 20 | —20 | | 17 56 | Light | | |
| | 10 35 | | 86 20 | —21 | | | | | |
| | 11 10 | | 86 20 | —21 | | 17 58,3 | | | |
| | 11 42 | | 86 20 | —21 | | | | | |
| | Midnᵗ | | 86 20 | —22 | | 17 59 | | | |
| Mar. 28th | 1 8 | A. M. | 85 50 | —22½ | | 18 1,6 | Westerly | Hazy | *Max. easterly var.* |
| | 1 50 | | 85 20 | —22½ | | 18 2,8 | Light | | |
| | 2 30 | | 84 40 | —22½ | | | | | |
| | 3 5 | | 84 00 | —22½ | | 18 7,9 | | | |
| | 3 52 | | 84 00 | —22½ | | 18 6,0 | | | |
| | 6 30 | | 83 20 | —23 | | 17 58,5 | | | |
| | 7 00 | | 83 20 | —23 | | 18 7,2 | Easterly | Clear and | |
| | 7 30 | | 83 20 | —23 | | 17 55,7 | Light | fine | |
| | 9 10 | | 83 00 | —22 | To the right hand. | 18 3,7 | | | |
| | 9 30 | | 82 30 | —21½ | | | | | |
| | 9 56 | | 82 00 | —21½ | | 18 10,8 | | | |
| | 10 30 | | 82 00 | —20 | | | | | |
| | 11 00 | | 81 40 | —20 | | 18 10,4 | | | |
| | +11 30 | | 81 30 | —20 | | 18 4,4 | | | |
| | 1 00 | P. M. | 83 30 | —18 | | 18 1 | ..... | ..... | *Max. westerly var.* |
| | 1 15 | | 85 30 | —18 | | | | | |
| | 1 30 | | 85 30 | —18 | | | | | |
| | 1 40 | | 85 00 | —18 | | | | | |
| | 2 00 | | 85 00 | —18 | | 18 2,5 | | | |
| | 2 30 | | 66 50 | —18 | | | | | |
| | 2 50 | | 87 00 | —18 | | 17 56,2 | | | |
| | 3 22 | | 87 00 | —18 | | | | | |
| | 3 45 | | 87 00 | —18 | | | | | |
| | 5 30 | | 88 00 | —18 | | 17 51,5 | | | |
| | — 6 00 | | 88 10 | —18 | | ..... | | | |
| | 6 30 | | 87 30 | —19½ | | 17 53,3 | | | |
| | 7 00 | | 87 30 | —20 | | ..... | Ditto | Hazy | |
| | 9 5 | | 87 30 | —20½ | | 17 52,8 | | with snow | |
| | 9 50 | | 87 30 | —20½ | | 17 56,3 | ..... | ..... | *Max. easterly var.* |
| | 10 20 | | 87 30 | —20½ | | | | | |
| | 10 50 | | 87 20 | —20½ | | 17 57,8 | | | |

North end of Needle to the S. 85° W. The line of min. daily variation.

| Date. | Mean Time of Obser-vation. | A.M. or P.M. | Reading of north end of needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 28th | 11 15 | P. M. | S 86 10W | —20½ | ..... | 17 57,5 | | | |
| | 11 52 | | 86 00 | —21 | ..... | 17 58,8 | | | |
| Mar. 29th | 1 7 | A. M. | 86 10 | —21 | ..... | 17 59,3 | East | Hazy | |
| | 1 52 | | 86 20 | —21 | ..... | 18 0,5 | Light | | |
| | 2 12 | | 86 10 | —21 | | | | | |
| | 2 50 | | 86 10 | —22 | ..... | 18 2,3 | | | |
| | 3 45 | | 86 10 | —22 | | | | | |
| | 4 12 | | 86 10 | —22 | ..... | 18 3,5 | | | |
| | 5 00 | | 85 45 | —23 | ..... | 18 3,3 | | | |
| | 5 30 | | 84 30 | —23 | | | | | |
| | 7 00 | | 84 50 | —23 | ..... | 17 57,5 | | | |
| | 7 30 | | 84 50 | —23 | ..... | 18 4,7 | | | |
| | 9 10 | | 84 40 | —21 | ..... | 18 0,8 | ..... | ..... | Halo and Parhelion on each side |
| | 9 46 | | 84 30 | —21 | ..... | 17 57,5 | | | side of ⊙. *Max.* |
| | 10 12 | | 84 20 | —21 | ..... | 17 51,2 | Ditto | Ditto | *westerly var.* |
| | 11 5 | | 85 10 | —20 | ..... | 18 14,3 | | | |
| | 11 40 | | 84 40 | —19 | To the right hand. | | | | |
| | 0 7 | P. M. | 84 10 | —19 | ..... | 18 18 | | | |
| | + 1 2 | | 84 00 | —18½ | ..... | 17 46,7 | | | |
| | 1 40 | | 84 00 | —18 | ..... | ..... | ..... | ..... | *Mvx. easterly var.* |
| | 2 15 | | 84 10 | —17½ | ..... | 17 48,5 | | | |
| | 2 50 | | 84 40 | —17½ | | | | | |
| | 3 15 | | 85 00 | —17½ | ..... | 17 48 | | | |
| | 3 55 | | 85 00 | —17 | ..... | 17 56,2 | | | |
| | 6 00 | | 85 15 | —19½ | ..... | 17 55,5 | Easterly | Clear and | |
| | 7 00 | | 85 30 | —21 | ..... | 17 53 | Light | fine | |
| | 7 30 | | 85 30 | —21 | | | | | |
| | 8 00 | | 85 40 | —22 | ..... | 17 59,3 | | | |
| | 8 30 | | 85 40 | —22 | | | | | |
| | 8 50 | | 85 40 | —22 | | | | | |
| | — 9 12 | | 86 30 | —22 | ..... | 17 58,5 | | | |
| | 10 14 | | 86 30 | —22 | ..... | 17 59,7 | | | |
| | 10 46 | | 86 20 | —22 | | | | | |
| | 11 20 | | 86 20 | —22 | ..... | 18 1,3 | | | |
| | Midnt | | 86 00 | —22 | ..... | 18 2,8 | Northerly | Clear | |
| Mar. 30th | 0 8 | A. M. | 85 10 | —22 | ..... | ..... | North | Clear | |
| | 0 10 | | 84 25 | —22 | To the right hand. | | Light | | |
| | 1 20 | | 84 25 | —22 | ..... | 18 0,3 | | | |
| | 2 35 | | 82 40 | —22 | ..... | 18 9,3 | | | |
| | 3 10 | | 82 30 | —22½ | ..... | 18 14,8 | | | |
| | 3 58 | | 77 30 | —23 | ..... | 18 31,3 | | | |
| | + 5 00 | | 75 00 | —23½ | ..... | 18 24,2 | ..... | ..... | |
| | 6 00 | | 78 28 | —23½ | ..... | 18 11,5 | | | |
| | 6 10 | | 79 00 | —23½ | | | | | |
| | 6 40 | | 78 30 | —23½ | | | | | |
| | 7 00 | | 78 00 | —23½ | ..... | 18 13,5 | Easterly | Clear and | |
| | 7 15 | | 79 00 | —23½ | | | Light | fine | |
| | 7 20 | | 80 00 | —23½ | | | | | |
| | 7 30 | | 81 00 | —23 | | | | | |
| | 8 00 | | 81 00 | —23 | ..... | 18 11,4 | | | |

North end of Needle to the S 85° W. The line of min. daily variation.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Mar. 30th | 10 00 | A. M. | S 83 30W | —21 | ..... | 18 10,3 | ..... | Hazy | *Max. westerly var.* |
| | 10 10 | | 85 00 | —21 | | | | | |
| | 10 30 | | 80 20 | —21 | | | | | |
| | 10 50 | | 83 30 | —20½ | ..... | 17 46,7 | | | |
| | 11 20 | | 88 40 | —19 | | | | | |
| | 11 40 | | 88 00 | —19 | | | | | |
| | Noon | | 85 00 | —19 | ..... | 17 54 | | | |
| | 0 50 | P. M | 88 00 | —19 | | | | | |
| | 1 10 | | 88 10 | —18 | ..... | 18 11,3 | | | |
| | 1 48 | | 88 00 | —18 | | | | | |
| | 2 36 | | 87 40 | —17 | ..... | 17 57,2 | | | |
| — | 3 00 | | 89 10 | —17 | ..... | 17 57 | | | |
| | 5 10 | | 88 30 | —18½ | ..... | 17 58,1 | | | |
| | 5 45 | | 87 40 | —19 | ..... | 17 53,7 | | | |
| | 6 15 | | 87 10 | —20 | | | | | |
| | 6 50 | | 86 50 | —21 | ..... | 17 54,1 | Easterly moderate | Hazy | |
| | 7 20 | | 86 40 | —21 | | | | | |
| | 8 00 | | 86 40 | —21 | ..... | 17 58,4 | | | |
| | 8 30 | | 86 40 | —21 | | | | | |
| | 8 45 | | 86 00 | —21 | | | | | |
| | 9 12 | | 86 00 | —22 | ..... | 17 55,2 | | | |
| | 9 42 | | 86 20 | —22 | | | | | |
| | 10 15 | | 86 30 | —22 | ..... | 17 57,2 | | | |
| | 10 50 | | 86 30 | —22 | | | | | |
| | 11 50 | | 86 30 | —22 | | | | | |
| | Midnt | | 86 30 | —22 | ..... | 17 57,7 | Ditto | Ditto | |
| Mar. 31st | 5 10 | A. M. | 81 00 | —24 | ..... | 18 0,7 | Easterly | Hazy | *Max. easterly var.* |
| | 5 50 | | 81 00 | —24 | ..... | ..... | Fresh | | at 1h 3m A. M. |
| | 6 20 | | 80 40 | —24 | .. .. | 18 9,4 | | | |
| + | 6 55 | | 80 30 | —24 | | | | | |
| | 7 15 | | 81 00 | —24 | .. .. | 18 4,4 | | | |
| | 8 00 | | 83 20 | —24 | .. .. | 17 55,8 | | | |
| | 9 6 | | 83 50 | —23 | .. .. | 18 3 | Ditto | Cloudy | |
| | 10 0 | | 84 30 | —22 | .. .. | 18 4,3 | Light | | |
| | 11 5 | | 83 10 | —21 | .. .. | 18 9,2 | | | |
| | 11 36 | | 83 00 | —21 | | | | | |
| | Noon | | 85 50 | —21 | .. To the left hand. .. | 18 1 | ..... | ..... | *Max. westerly var.* |
| — | 0 30 | P. M. | 86 30 | —21 | ..... | ..... | Easterly | | |
| | 1 10 | | 86 20 | —20 | ..... | 17 58,8 | moderate | | |
| | 1 50 | | 86 20 | —20 | | | | | |
| | 2 15 | | 86 20 | —19½ | ..... | 17 53,7 | | | |
| | 2 50 | | 86 20 | —19½ | | | | | |
| | 3 12 | | 86 20 | —19½ | ..... | 17 58,5 | | | |
| | 3 56 | | 86 20 | —19½ | ..... | 17 58,2 | | | |
| | 8 00 | | 86 20 | —23 | ..... | 17 56,5 | Easterly | Very Clear | |
| | 9 00 | | 86 30 | —24 | ..... | 17 57,7 | | | |
| | 9 56 | | 84 55 | —24 | ..... | 17 55,5 | ..... | ..... | ☽ on south meridian 19° altitude. |
| | 10 30 | | 84 55 | —24½ | | | | | |
| | 11 00 | | 85 00 | —25 | ..... | 17 56,5 | | | |
| | Midnt | | 85 15 | —25 | ..... | 18 1 | | | |

North end of Needle to the S 85° W. The line of min. daily variation.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| April 1st | 1 15 | A. M. | S 84 20W | —25½ | ..... | 18 3,5 | Easterly moderate | Clear | |
| | 1 52 | | 84 30 | —25½ | ..... | ..... | | | |
| | 2 18 | | 84 20 | —26 | ..... | 18 9,7 | | | |
| | 2 50 | | 84 00 | —26 | ..... | 18 15,5 | | | |
| | 3 20 | | 84 00 | —26½ | | | | | |
| | 3 56 | | 84 00 | —26½ | ..... | 18 4 | Squally | ..... | *Max. easterly var.* |
| | 6 00 | | 82 30 | —27 | ..... | 18 10,8 | Moderate easterly | Fine and Clear | |
| | 6 15 | | 82 00 | —27 | | | | | |
| | 6 30 | | 80 30 | —27 | | | | | |
| | 6 45 | | 79 30 | —27 | | | | | |
| | 7 00 | | 79 20 | —27 | ..... | 18 15 | | | |
| | 9 10 | | 78 50 | —24 | ..... | 18 23,3 | | | |
| | + 9 50 | | 78 00 | —23 | | | | | |
| | 10 15 | | 81 30 | —23 | ..... | 18 9 | | | |
| | 10 45 | | 83 20 | —23 | | | | | |
| | 11 6 | | 87 10 | —23 | .. Irregular. .. | 17 55,3 | ..... | ..... | The intervals of 10 vibˢ of the horizontal needle were rapidly decreasing between 11ʰ and 12ʰ A.M. |
| | 11 20 | | 90 00 | —22 | | | | | |
| | 11 32 | | 90 00 | —22 | | | | | |
| | 11 45 | | 87 30 | —21 | | ..... | Easterly light | Clear and Fine | |
| | 0 8 | P. M. | 87 20 | —20½ | | 17 49,8 | | | |
| | 1 00 | | 83 30 | —20 | ..... | 17 49,7 | | | |
| | 1 49 | | 90 00 | —19 | ..... | 17 43,8 | ..... | ..... | *Max. westerly var.* |
| | 2 30 | | 89 20 | —19 | | | | | |
| | 3 12 | | 88 15 | —19 | ..... | 17 55,7 | | | |
| | 4 00 | | 87 30 | —19 | ..... | 17 54,3 | | | |
| | 5 00 | | 88 50 | —21 | ..... | 17 44 | | | |
| | 6 00 | | 87 00 | —21 | ..... | 17 55 | | | |
| | 6 30 | | 85 00 | —21 | | | | | |
| | 7 30 | | 87 40 | —23 | ..... | 17 45 | | | |
| | 8 00 | | 88 00 | —23 | ..... | 17 52,3 | | | |
| | — 9 6 | | 91 50 | —23½ | ..... | 17 39,3 | | | |
| | 10 40 | | 89 30 | —23½ | ..... | 17 46,1 | | | |
| | 11 5 | | 86 20 | —23½ | ..... | 17 52,9 | Easterly light | Clear and Fine | *Max. easterly var.* |
| | 11 52 | | 85 30 | —25 | ..... | 17 59,1 | | | |
| Apr. 2nd | 1 00 | A. M. | 84 30 | —26 | ..... | 18 5,8 | Easterly moderate | Ditto | |
| | 1 32 | | 83 50 | —26 | | | | | |
| | 2 10 | | 83 20 | —26 | ..... | 18 4,7 | | | |
| | 2 42 | | 82 50 | —27 | | | | | |
| | 3 5 | | 82 00 | —27 | ..... | 18 4,5 | | | |
| | + 4 2 | | 81 40 | —27 | ..... | 18 8,8 | | | |
| | 5 00 | | 82 00 | —27 | ..... | 18 57,3 | | | |
| | 6 00 | | 82 10 | —26½ | ..... | 17 53,5 | | | |
| | 8 00 | | ——— | —26½ | ——— | 18 17,5 | | | |
| | 9 10 | | 82 40 | —24 | .. .. | 18 0,7 | | | |
| | 9 47 | | 83 00 | —24 | .. To the left hand. .. | ..... | Ditto | Hazy | |
| | 10 12 | | 83 30 | —24 | | 17 57,5 | | | |
| | 11 5 | | 84 20 | —23 | | 17 56 | | | |
| | 11 10 | | 85 00 | —23 | | | | | |
| | 11 45 | | 85 00 | —23 | .. .. | 17 33,8 | Squally | ..... | *Max. westerly var.* |

North end of Needle to the S 85° W. The line of min. daily variation.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| April 2d | 1 4 | P. M. | S 86 40W | —23 | ..... | 17 46 | | | |
| | 1 30 | | 87 30 | —22½ | | | | | |
| | — 1 50 | | 88 00 | —22½ | | | | | |
| | 2 15 | | 88 00 | —22½ | ..... | 17 47,4 | | | |
| | 2 50 | | 88 00 | —22 | | | | | |
| | 3 12 | | 88 00 | —22 | ..... | 17 53,6 | | | |
| | 3 55 | | 87 20 | —22 | ..... | 17 56 | | | |
| | 5 6 | | 86 30 | —23 | ..... | 17 53,5 | | | |
| | 6 00 | | 84 50 | —23 | ..... | 17 59,8 | Easterly Light | Hazy to the westward. | |
| | 7 5 | | 84 50 | —23½ | ..... | 17 54,7 | | | |
| | — | | — | —23½ | — | — | | | |
| | 9 5 | | 85 45 | —23 | ..... | 17 53,7 | | | |
| | 10 2 | | 86 10 | —23 | ..... | 17 56,5 | | | |
| | 10 50 | | 86 10 | —23 | ..... | 17 57 | | | |
| | Midnt | | 86 10 | —24 | ..... | 17 58 | ..... | ..... | *Max. easterly var.* |
| April 3d | 1 12 | A. M. | 84 00 | —24 | ..... | 18 5,1 | Ditto | Hazy | |
| | 1 55 | | 83 30 | —24 | | | | | |
| | 2 35 | | 83 30 | —24½ | ..... | 18 1,2 | | | |
| | 3 10 | | 83 20 | —24½ | ..... | 18 5,2 | | | |
| | 3 50 | | 82 30 | —24½ | ..... | 18 11,3 | | | |
| | — | | — | —24½ | — | — | | | |
| | + 9 00 | | 77 20 | —23 | | | | | |
| | 9 30 | | 79 00 | —23 | .. .. | ..... | ..... | ..... | *Max. westerly var.* |
| | 10 5 | | 82 30 | —22 | .. .. | 18 11 | | | |
| | 10 48 | | 81 10 | —22 | .. .. | 18 4,3 | | | |
| | 11 22 | | 80 10 | —21½ | | | | | |
| | 0 10 | P. M. | 82 30 | —21 | .. .. | 17 57,5 | | | |
| | 0 13 | | 87 00 | —21 | | | | | |
| | 0 15 | | 87 24 | —21 | | | | | |
| | 1 6 | | 90 30 | —21 | .. .. | 17 45,7 | | | |
| | — 1 40 | | 91 5 | —20 | | | | | |
| | 3 00 | | 86 55 | —19 | ..... | 17 56,4 | Easterly Light | Hazy with small snow. | |
| | 3 30 | | 86 00 | —18 | ..... | 18 00,5 | | | |
| | 5 2 | | 86 00 | —19 | ..... | 17 54,3 | | | |
| | 5 30 | | 86 30 | —19½ | | | | | |
| | 6 00 | | 87 00 | —19½ | ..... | 17 51,9 | | | |
| | 6 25 | | 87 00 | —20 | | | | | |
| | 6 50 | | 87 00 | —20 | ..... | 17 54,3 | | | |
| | 7 20 | | 86 30 | —20½ | | | | | |
| | 7 54 | | 86 10 | —21 | ..... | 17 55,1 | | | |
| | 9 10 | | 86 30 | —21 | ..... | 17 55,5 | | | |
| | 10 2 | | 86 20 | —21 | ..... | 17 57,3 | | | |
| | 11 15 | | 86 20 | —22 | ..... | 17 58,7 | | | |
| | Midnt | | 86 20 | —22 | ..... | 17 58,6 | ..... | ..... | *Max. easterly var.* |
| Apr. 4th | 5 20 | A. M. | 85 00 | —23 | ..... | 17 56,0 | Ditto | Hazy | |
| | 5 50 | | 85 00 | —23 | | | | | |
| | 6 15 | | 84 30 | —23 | ..... | 18 0,4 | | | |
| | 6 52 | | 84 00 | —23 | | | | | |
| | 7 00 | | 84 00 | —23 | ..... | 18 2,7 | | | |
| | 7 10 | | 83 00 | —23 | | | | | |

To the left hand.

## North end of Needle to the S 85° W. The line of minimum daily variation.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahren$^{t}$. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| April 4th | + 9 10 | A. M. | S 82 00 W | —21 | .. To the left hand. . | 18 12,3 | | | |
| | 9 52 | | 83 40 | —21 | | | | | |
| | 10 15 | | 84 50 | —21 | .. .. | 18 1,5 | | | |
| | 11 5 | | 85 30 | —21 | .. .. | 18 1,5 | | | |
| | 0 5 | P. M. | 85 40 | —19 | .. .. | 18 2 | .... | .... | *Max.westerly var.* |
| | — 1 10 | | 91 00 | —18 | .. .. | 17 43,5 | | | |
| | 1 20 | | 91 00 | —18 | | | | | |
| | 1 50 | | 89 10 | —18 | | | | | |
| | 2 10 | | 89 00 | —18 | ..... | 17 45,4 | .... | .... | *Max.easterly var.* |
| | 2 45 | | 89 00 | —18 | | | | | |
| | 3 8 | | 86 50 | —18 | ..... | 17 58,1 | | | |
| | 3 25 | | 86 50 | —17 | ..... | ..... | Easterly light | Clear and fine. | |
| | 3 54 | | 86 10 | —17 | ..... | 18 2,7 | | | |
| | 5 00 | | 86 10 | —18 | ..... | 18 00 | | | |
| | 5 30 | | 86 30 | —18 | | | | | |
| | 6 00 | | 86 30 | —19½ | ..... | 17 55 | | | |
| | 7 00 | | 86 30 | —20 | ..... | 17 54 | | | |
| | 9 00 | | 86 30 | —22 | ..... | 17 54 | | | |
| | 9 55 | | 86 30 | —23 | | | | | |
| | 10 15 | | 86 25 | —23 | ..... | 17 56,2 | | | |
| | 11 00 | | 86 25 | —23 | | | | | |
| | 11 16 | | 86 25 | —23 | ..... | 17 57,4 | | | |
| | 11 50 | | 86 00 | —23 | ..... | 18 0,3 | | | |
| April 5th | 1 7 | A. M. | 86 00 | —24 | ..... | 18 2,3 | | | |
| | 2 5 | | 85 40 | —24 | ..... | 18 2,8 | | | |
| | 3 0 | | 85 30 | —25 | ..... | 18 3,3 | Easterly light | Clear and fine. | |
| | 4 2 | | 85 00 | —25 | ..... | 18 7,5 | | | |
| | 5 30 | | 85 00 | —25 | ..... | 17 58 | | | |

## North end of Needle to the N 85° E.

Both magnets were placed to the south of the compass; the distance from the centre of the box, to the nearest end of the magnet, attracting the north end of the needle, was 18,98 inches, and to the nearest end of the other, attracting the south end of the needle, 27 inches. The needle now made 1 vibration in 9,5 seconds, the directive force being reduced in the ratio of 0,35 to 1 nearly.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| April 5th | 6 00 | A. M. | N 85 0 E | —25 | ..... | 17 59,5 | Easterly light | Clear and fine. | ☉ rising ENE. (true.) |
| | 7 00 | | 85 10 | —25 | ..... | 18 6,2 | | | |
| | 7 30 | | 84 30 | —25 | ..... | 18 1,5 | | | |
| | 8 56 | | 84 00 | —22 | .. To the right hand. .. | 18 1,8 | | | |
| | 9 15 | | 83 50 | —22½ | .. .. | 18 1 | | | |
| | 9 30 | | 83 20 | —21½ | .. .. | ..... | .... | .... | *Max.westerly var.* |
| | 10 00 | | 82 30 | —21½ | .. .. | 18 0,2 | | | |
| | 10 15 | | 84 30 | —21 | | | | | |
| | 10 50 | | 86 00 | —20 | | | | | |
| | 11 00 | | 85 30 | —20 | .. .. | 18 6,4 | | | |
| | 11 30 | | 84 30 | —19 | | | | | |

## North end of Needle to the N 85° E.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variatian. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| April 5th | 11 35 | A. M. | N 83 00 E | —19 | | | | | |
| | 11 40 | | 82 00 | —19 | | | | | |
| | 11 50 | | 81 00 | —19 | | | | | |
| | 11 55 | | 80 30 | —19 | ..... | ..... | ..... | Slight fall of small snow. | |
| | Noon | | 80 00 | —19 | ..... | 17 47,6 | | | |
| | + 0 45 | P. M. | 79 50 | —18 | | | | | |
| | 1 00 | | 79 50 | —18 | ..... | 17 51,6 | | | |
| | 1 30 | | 80 00 | —18 | | | | | |
| | 2 00 | | 80 00 | —18 | ..... | 17 56 | | | |
| | 2 30 | | 80 30 | —18½ | | | | | |
| | 2 40 | | 79 50 | —17 | ..... | 17 55,2 | | | |
| | 3 30 | | 80 50 | —17 | | | | | |
| | 3 58 | | 81 50 | —17 | ..... | 17 57,1 | | | |
| | 5 30 | | 82 00 | —20 | ..... | 17 55,8 | | | |
| | 6 00 | | 81 50 | —21 | ..... | 17 55 | | | |
| | 7 00 | | 81 50 | —21 | ..... | 17 50 | | | |
| | 9 00 | | 81 40 | —23 | ..... | 18 2,2 | | | |
| | 9 45 | | 81 40 | —23 | | | | | |
| | 10 20 | | 81 40 | —23½ | ..... | 18 2,9 | | | |
| | 10 50 | | 81 50 | —23 | | | | | |
| | 11 15 | | 82 10 | —24 | ..... | 18 00 | | | |
| | 11 54 | | 82 40 | —24 | ..... | 18 1,6 | ..... | ..... | *Max. easterly variation.* |
| April 6th | 1 5 | A. M. | 83 00 | —25 | ..... | 18 6,8 | Easterly light. | Clear and fine | |
| | 1 55 | | 83 25 | —25 | | | | | |
| | 2 5 | | 83 50 | —25 | ..... | 18 6,2 | | | |
| | 2 7 | | 84 00 | —25 | | | | | |
| | 3 0 | | 84 10 | —26 | ..... | 18 9,3 | | | |
| | 3 50 | | 84 25 | —26 | ..... | 17 54,4 | | | |
| | 5 6 | | 84 35 | —26 | ..... | 18 3 | | | |
| | 5 58 | | 85 10 | —26 | ..... | 18 7,8 | ENE | | |
| | 7 10 | | 85 30 | —26 | ..... | 18 9,7 | mod. & clear | | |
| | 7 15 | | 87 00 | —26 | To the left hand. | | | | |
| | — 7 30 | | 87 30 | —26 | ..... | ..... | Easterly | | |
| | 7 55 | | 87 30 | —25 | ..... | 18 15,5 | light | | |
| | 9 00 | | 87 30 | —23½ | ..... | 18 11,8 | | | |
| | 9 30 | | 87 20 | —23½ | | | | | |
| | 10 00 | | 87 10 | —22 | ..... | 18 9,2 | ..... | ..... | *Max. westerly variation.* |
| | 10 30 | | 87 30 | —22 | | | | | |
| | 11 00 | | 87 30 | —22 | ..... | 18 2,6 | | | |
| | 11 35 | | 87 20 | —21 | | | | | |
| | Noon | | 87 20 | —20 | ..... | 18 9 | | | |
| | 0 30 | P. M. | 87 10 | —19 | | | | | |
| | 0 40 | | 85 40 | —19 | | | | | |
| | 1 00 | | 84 50 | —19½ | ..... | 17 56,1 | | | |
| | 1 30 | | 84 50 | —19½ | | | | | |
| | 1 55 | | 84 40 | —19½ | ..... | 17 59 | | | |
| | 2 15 | | 84 40 | —19½ | ..... | ..... | Easterly | Clear and | |
| | 2 50 | | 84 40 | —19½ | | | light | fine | |
| | 3 15 | | 84 30 | —19½ | ..... | 18 0,4 | ..... | ..... | *Max. easterly variation.* |
| | 3 56 | | 84 10 | —19½ | ..... | 18 1,7 | | | |

## North end of Needle to the N 85° E.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahren$^{t}$. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| April 6th | 5 10 | P. M. | N 84 10 E | —20 | ..... | 18 1,8 | | | |
| | 6 6 | | 84 00 | —21 | ..... | 17 56 | | | |
| | 6 50 | | 84 10 | —21 | ..... | 17 56,7 | | | |
| | 7 48 | | 84 20 | —22 | ..... | 17 55,7 | | | |
| | + 9 00 | | 83 30 | —22 | ..... | 18 3,3 | | | |
| | 10 00 | | 83 30 | —23 | ..... | 18 0,3 | | | |
| | 10 30 | | 83 30 | —24 | | | | | |
| | 11 00 | | 83 30 | —24 | ..... | 18 00 | Easterly light | Clear and fine. | |
| | 11 30 | | 83 30 | —24 | Irregular. | | | | |
| | Mid$^{t}$. | | 83 30 | —24½ | ..... | 18 2,5 | | | |
| April 7th | 1 10 | A. M. | 83 30 | —25 | ..... | 18 1,1 | Easterly light | Clear and fine. | |
| | 1 50 | | 83 30 | —25 | ..... | 18 4,6 | | | |
| | 2 30 | | 83 30 | —25 | | | | | |
| | 3 3 | | 83 30 | —25 | ..... | 17 58,7 | | | |
| | 3 50 | | 84 00 | —25 | ..... | 17 58,5 | | | |
| | 5 00 | | 84 20 | —25 | ..... | 17 56,6 | | | |
| | 6 00 | | 84 15 | —25 | ..... | 18 0,7 | | | |
| | 7 00 | | 84 35 | —24 | ..... | 18 6,1 | | | |
| | — 7 55 | | 84 55 | —23 | ..... | 18 1,2 | | | |
| | 9 10 | | 84 30 | —23 | ..... | 18 5 | | | |
| | 9 50 | | 84 30 | —22 | ..... | 18 6,5 | | | |
| | 10 11 | | 84 30 | —21 | | | | | |
| | 11 2 | | 84 30 | —20 | ..... | 18 7,2 | | | |
| | 11 51 | | 84 30 | —19 | | | | | |
| | Noon | | 84 30 | —18½ | ..... | 18 8 | Ditto | Ditto | |
| | 0 30 | P. M. | 84 30 | —17½ | | | | | |
| | 1 00 | | 83 30 | —17 | ..... | 17 55,2 | | | |
| | 1 30 | | 82 20 | —16½ | | | | | |
| | 2 00 | | 82 00 | —16½ | ..... | 17 53,5 | ..... | ..... | *Max. westerly var.* |
| | 2 30 | | 81 30 | —16½ | | | | | |
| | 3 00 | | 81 30 | —16½ | ..... | 17 57 | | | |
| | 5 00 | | 81 25 | —17 | To the right hand. | 17 53 | | | |
| | 5 30 | | 81 10 | —18 | | | | | |
| | + 6 10 | | 81 5 | —19 | ..... | 17 52,8 | | | |
| | 6 30 | | 81 5 | —19 | | | | | |
| | 7 10 | | 81 5 | —20 | ..... | 17 52,6 | | | |
| | 7 30 | | 81 10 | —20 | | | | | |
| | 7 52 | | 81 35 | —20 | | | | | |
| | 7 55 | | 81 40 | —20 | ..... | 17 56,6 | | | |
| | 9 19 | | 81 50 | —20 | ..... | 18 1,8 | | | |
| | 10 6 | | 82 00 | —21 | ..... | 17 59,7 | | | |
| | 11 10 | | 82 20 | —21 | ..... | 18 1,5 | | | |
| | 11 56 | | 82 15 | —22 | ..... | 18 1,5 | | | |
| April 8th | 1 00 | A. M. | 83 30 | —22 | ..... | 17 59 | Easterly light | Clear and fine | *Max. easterly var.* |
| | 1 10 | | 84 30 | —22 | | | | | |
| | 1 40 | | 84 30 | —22½ | | | | | |
| | 2 10 | | 85 00 | —22 | ..... | 18 9 | | | |

## North end of Needle to the NE.

The magnets were now placed to the north and south of the needle, with their axes slightly inclined to the magnetic meridian; the north magnet had its north pole towards the compass-box, at the distance of 29,1 inches from its centre, and the south magnet had its south pole towards the compass-box, at the distance of 30,1 inches from its centre: the time in which the needle now performed 1 vibration, was 14,4 seconds; so that the directive force was reduced in the ratio of 0,15 to 1.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| April 8th | 5 10 | A. M. | N 45 30 E | —23 | ..... | 18 1,3 | East Fresh | Clear and Fine | It will be seen that, at the time of the greatest *westerly var.* an increase of directive power in the horizontal needle took place, which accounts for the great expression of 50° for the daily variation. |
| | 5 55 | | 45 20 | —22 | | | | | |
| | 6 30 | | 45 20 | —22 | ..... | 18 9,2 | | | |
| | 6 55 | | 45 20 | —22 | | | | | |
| | 7 20 | | 45 20 | —21½ | ..... | 18 12,3 | | | |
| | 7 50 | | 44 10 | —21½ | | | | | |
| | 8 00 | | 43 50 | —21½ | ..... | 18 3,4 | | | |
| | 9 26 | | 42 20 | —20 | ..... | 17 58,8 | | | |
| | 9 28 | | 42 00 | —20 | .. To the right hand. .. | 18 22,8 | | | |
| | 10 10 | | 41 50 | —20 | | | | | |
| | 10 30 | | 41 30 | —20 | | | | | |
| | 11 10 | | 41 10 | —19 | .. .. | 18 6 | | | |
| | 11 30 | | 41 00 | —18½ | | | | | |
| | Noon | | 36 10 | —18½ | .. .. | 17 51,8 | | | |
| | 0 15 | P. M. | 35 00 | —18½ | | | | | |
| | 0 30 | | 29 00 | —18½ | | | | | |
| | + 1 10 | | 1 30 | —17 | ..... | 17 56,2 | ..... | ..... | *Max. west. var.* |
| | 2 00 | | 10 10 | —17 | ..... | 17 50,5 | | | |
| | 2 50 | | 16 30 | —17 | | | | | |
| | 3 10 | | 17 00 | —17 | ..... | 17 44 | Ditto moderate | Clear and Fine | |
| | 3 47 | | 17 40 | —17 | ..... | 17 53 | | | |
| | 5 5 | | 25 30 | —17 | ..... | 17 43,5 | | | |
| | 5 30 | | 25 30 | —17 | | | | | |
| | 6 00 | | 27 30 | —17 | ..... | 17 37 | | | |
| | 6 20 | | 27 30 | —18 | | | | | |
| | 6 35 | | 32 00 | —19 | | | | | |
| | 7 10 | | 33 30 | —19 | ..... | 17 41,5 | | | |
| | 8 00 | | 37 00 | —19 | ..... | 17 34,7 | | | |
| | 9 30 | | 40 00 | —20 | ..... | 17 44,6 | | | |
| | 10 00 | | 40 00 | —20 | ..... | 17 45,4 | | | |
| | 10 35 | | 40 00 | —20 | | | | | |
| | 11 12 | | 45 10 | —20½ | ..... | ..... | Easterly | Hazy | *Max. east. var.* |
| | —Midnᵗ | | 51 30 | —20½ | ..... | ..... | Light | ..... | |

## North end of Needle to the N E.

The situation of the magnets, in this case, was the same as in the preceding observations at N. E; except that their ends nearest to the needle were 29,7 inches from the centre of the compass-box: the needle making 1 vibration in 12 seconds, the directive force was reduced in the ratio of 0,22 to 1.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrenᵗ. / Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Apr. 9th | 1 00 | A. M. | N 54 00 E | —20½ | ..... | 18 4 | Easterly moderate | Hazy | |
| | 2 00 | | 54 00 | —20½ | ..... | 17 7,3 | | | |
| | 3 12 | | 53 50 | —20½ | ..... | 18 8,2 | | | |
| | 3 48 | | 53 50 | —21 | | | | | |
| | 4 8 | | 53 30 | —20 | ..... | 18 7,5 | | | |
| | 5 00 | | 53 00 | —20 | ..... | 18 12 | | | |
| | 6 00 | | 52 00 | —20 | ..... | 18 8 | | | |
| | 6 30 | | 51 30 | —20 | | | | | |
| | 7 00 | | 51 00 | —20 | ..... | 18 8,2 | | | |
| | 7 30 | | 50 40 | —20 | ..... | 18 7,5 | | | |
| | 9 00 | | 50 20 | —18½ | ..... | 18 9,7 | | | |
| | 9 35 | | 44 50 | —18½ | ..... | ..... | Ditto | Overcast | |
| | 9 50 | | 44 10 | —18½ | ..... | 18 9,2 | | | |
| | 10 15 | | 44 10 | —18 | | | | | |
| | 10 45 | | 44 00 | —17½ | | | | | |
| | 11 10 | | 44 00 | —17 | To the right hand. | 18 16,1 | | | |
| | 11 45 | | 43 40 | —17 | | | | | |
| | 12 8 | P. M. | 43 00 | —16½ | ..... | 18 9,7 | | | |
| | 1 5 | | 38 55 | —16 | ..... | 17 58,5 | ..... | ..... | *Max. westerly var.* |
| | 1 30 | | 38 40 | —16 | | | | | |
| | 2 10 | | 38 30 | —16 | ..... | 17 53,9 | | | |
| | 2 30 | | 38 15 | —15 | | | | | |
| | 3 10 | | 38 00 | —16 | ..... | 17 47,8 | | | |
| | + 3 50 | | 34 00 | —16 | ..... | 17 41,4 | | | |
| | 5 00 | | 34 00 | —17 | ..... | 17 41,5 | | | |
| | 6 00 | | 34 00 | —17 | ..... | 17 55 | | | |
| | 6 30 | | 34 00 | —17 | | | | | |
| | 7 00 | | 34 00 | —17 | ..... | 17 43 | | | |
| | 8 00 | | 34 00 | —17 | ..... | 17 50,2 | | | |
| | 9 10 | | 34 20 | —18½ | ..... | 17 47,2 | | | |
| | 9 45 | | 35 20 | —19 | | | | | |
| | 10 5 | | 35 30 | —19 | ..... | 17 54,4 | Easterly moderate | Hazy | |
| | 10 35 | | 35 50 | —19½ | | | | | |
| | 11 7 | | 36 00 | —19 | ..... | 17 55,4 | | | |
| | 11 34 | | 36 30 | —19 | | | | | |
| | 11 56 | | 37 30 | —19 | ..... | 17 56,5 | | | |

## North end of Needle to the N E.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Apr. 10th | 1 13 | A. M. | N 42 50 E | —19 | ..... | 17 57,5 | Easterly moderate | Hazy | |
| | 1 15 | | 44 50 | —19 | | | | | |
| | 1 16 | | 45 30 | —19 | | | | | |
| | 1 17 | | 46 00 | —19 | | | | | |
| | 1 58 | | 47 00 | —18½ | | | | | |
| | 2 11 | | 47 30 | —18½ | ..... | 18 3,8 | | | |
| | 2 55 | | 51 40 | —18 | ..... | 18 11 | ..... | ..... | *Max. easterly var.* |
| | — 3 50 | | 53 00 | —18 | ..... | 18 4,4 | | | |
| | 5 10 | | 52 20 | —18 | ..... | 18 14,5 | | | |
| | 6 4 | | 52 20 | —18 | ..... | 18 13,3 | | | |
| | 7 2 | | 52 40 | —17 | ..... | 18 17,7 | | | |
| | 7 50 | | 52 20 | —17 | | | | | |
| | 8 10 | | 52 20 | —16 | .. To the right hand. .. | 18 20,2 | | | |
| | 9 00 | | 52 00 | —16 | .. .. | 18 7,2 | Easterly Fresh | Thick hazy weather with snow drift. | |
| | 10 00 | | 51 00 | —16 | .. .. | 18 10 | | | |
| | 10 30 | | 46 30 | —15½ | | | | | |
| | 11 00 | | 41 00 | —15 | .. .. | 17 53,5 | | | |
| | 11 30 | | 40 00 | —14½ | | | | | |
| | +Noon | | 38 40 | —14½ | .. .. | 17 58,5 | | | |
| | 1 00 | P. M. | 39 00 | —14 | .. .. | 17 55,6 | | | |
| | 1 32 | | 40 20 | —14 | | | | | |
| | 2 00 | | 40 20 | —14 | ..... | 18 3,5 | ..... | ..... | *Max. westerly var.* |
| | 2 32 | | 40 20 | —13½ | ..... | ..... | E S E | Much snow drift and thick weather. | |
| | 3 00 | | 39 40 | —13½ | ..... | 17 37,9 | Strong | | |
| | 3 34 | | 39 00 | —13½ | | | | | |
| | 3 55 | | 39 00 | —13½ | ..... | 17 48,2 | | | |
| | 5 7 | | 39 00 | —13 | ..... | 17 56,8 | | | |
| | 6 6 | | 39 10 | —13 | ..... | 17 59,2 | | | |
| | 7 5 | | 39 10 | —13 | ..... | 17 58,7 | E S E strong gales with heavy drift of snow. | | |
| | 7 46 | | 39 00 | —13 | ..... | 18 0,5 | | | |

The direction of the Needle was not registered after $7^h$ $46^m$ P. M. in consequence of the severity of the weather: Gale of wind from eastward, and much snow drift.

## North end of Needle to the S. E.

The needle was held in equilibrio at this point by two bar magnets; one to the North, with its nearest end from the centre of the compass 26,3 inches; the other to the South, having its nearest end from the centre of the compass 26,6 inches; the axis of each magnet was slightly inclined to the meridian, and the needle under their influence made 1 vibration in 11,½ seconds, the directive power being reduced in the ratio of 0,24 to 1 nearly.

| Date. | Mean Time of Observation. | A.M. or P.M. | Reading of north end of needle. | Temp. Fahrent. Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Apr. 12th | 6 30 | A. M. | S 44 00 E | + 3 | ..... | 18 17,4 | E S E Fresh | Hazy | *Max. easterly var.* took place at $0^h\ 3^m$ A. M. |
| | 7 00 | | 43 30 | + 3½ | | | | | |
| | 8 00 | | 43 10 | + 4 | ..... | 18 20,3 | | | |
| | 9 32 | | 43 00 | + 5 | ..... | 18 16,5 | | | |
| | 10 15 | | 42 55 | + 6 | ..... | 18 19,6 | | | |
| | 10 32 | | 42 30 | + 6 | | | | | |
| | 11 7 | | 42 30 | + 6 | ..... | 18 12,2 | | | |
| | 11 30 | | 42 10 | + 7 | ..... | ..... | East moderate | Snow falling | |
| | 11 32 | | 42 00 | + 7 | ..... | | | | |
| | 11 33 | | 41 55 | + 7 | | | | | |
| | 0 5 | P. M. | 41 55 | + 7 | ..... | 18 12,8 | | | |
| | 1 10 | | 42 00 | + 6 | ..... | 18 10,3 | ..... | ..... | *Max. westerly var.* |
| | 2 7 | | 42 00 | + 5 | ..... | 18 8,7 | | | |
| | + 3 8 | | 41 50 | + 5 | ..... | 18 8,2 | Squally | Much drift | |
| | 3 57 | | 41 50 | + 5 | ..... | 18 6,2 | | | |
| | 5 00 | | 42 10 | + 5 | ..... | 17 59,7 | | | |
| | 5 30 | | 42 40 | + 5 | | | | | |
| | 6 00 | | 42 40 | + 5 | ..... | 18 1,7 | | | |
| | 6 30 | | 42 40 | + 5 | | | | | |
| | 7 00 | | 42 40 | + 4 | ..... | 17 56,3 | | | |
| | 8 00 | | 42 40 | + 4½ | ..... | 17 58 | | | |
| | 10 2 | | 50 30 | + 4 | ..... | 18 7 | Eastward | Stars | |
| | 11 10 | | 50 30 | + 4 | ..... | 18 6,2 | Squally | faintly visible | |
| | 11 55 | | 50 30 | + 4 | ..... | 18 11 | | | |
| Apr. 13th | 1 7 | A. M. | 50 0 | + 3 | ..... | 18 14 | Easterly moderate | Cloudy | |
| | 2 5 | | 49 30 | + 2 | ..... | 18 14,5 | | | |
| | 3 6 | | 50 30 | + 1 | ..... | 18 16,7 | | | |
| | — 4 0 | | 51 30 | — 1 | ..... | 18 18,5 | | | |
| | 5 30 | | 49 5 | — 1 | ..... | 18 22,8 | | | |
| | 6 00 | | 48 30 | — 1 | ..... | 18 21,5 | Easterly Light | Fine, clear. | *Max. easterly var.* |
| | 6 30 | | 48 00 | — 1 | | | | | |
| | 7 00 | | 47 00 | Zero | ..... | 18 24,8 | N E | | |
| | 7 30 | | 46 20 | Zero | ..... | ..... | Squally with drift | | |
| | 8 00 | | | | ..... | 18 28,5 | | | |
| | 9 00 | | 44 00 | + 0½ | ..... | 18 25,8 | | | |
| | 9 50 | | 43 50 | + 0½ | | | | | |
| | 10 10 | | 41 00 | Zero | ..... | 18 23,1 | | | |
| | 10 30 | | 36 00 | Zero | | | | | |
| | + 11 10 | | 35 40 | + 1 | ..... | 18 21,2 | | | |
| | 11 30 | | 36 5 | + 1 | ..... | 18 11,8 | | | |
| | 1 5 | P. M. | 37 00 | + 1 | ..... | 18 8,4 | Northerly Fresh | Hazy ..... | *Max. westerly var.* |
| | 1 30 | | 37 00 | + 1 | ..... | 17 58,6 | | | |

To the left hand.

## North end of Needle to the S E.

| Date. | Mean Time of Observation. | A. M. or P. M. | Reading of north end of Needle. | Temp. Fahre n Instr. | Direction of north end of needle during westerly daily variation. | Time that a horizontal needle took to make 60 vibrations. | Winds. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ | ° | | m. s. | | | |
| Apr. 13th | 2 15 | P. M. | S 37 00 E | + 1 | ..... | 17 59 | | | |
| | 3 30 | | 37 00 | Zero | ..... | 17 55,6 | | | |
| | 5 30 | | 44 30 | — 2 | ..... | 17 54 | N. by E. | Hazy | |
| | 6 00 | | 46 00 | — 2 | ..... | 17 59,5 | Fresh | with drift | |
| | 6 15 | | 47 10 | — 2 | ..... | 17 56,5 | | | |
| | — 6 30 | | 50 00 | — 2 | | | | | |
| | 7 00 | | 50 00 | — 4 | ..... | 17 58,5 | Ditto | Ditto | |
| | 7 30 | | 50 00 | — 4 | | | | | |
| | 9 5 | | 49 30 | — 5½ | ..... | 18 2,5 | | | |
| | 9 45 | | 49 00 | — 6½ | | | | | |
| | 10 10 | | 47 20 | — 7 | ..... | 18 5,6 | | | |
| | 11 00 | | 47 20 | — 7 | ..... | 18 2,5 | | | |
| | 11 30 | | 47 10 | — 7 | ..... | ..... | Fresh | Cloudy | |
| | Midnt | | 47 00 | — 7 | ..... | 18 3,3 | North | overcast | |
| Apr. 14th | 1 10 | A. M. | 46 30 | — 7½ | ..... | 18 14,0 | E S E | Cloudy | |
| | 1 30 | | 46 20 | — 8 | | | Fresh | | |
| | 2 10 | | 45 10 | — 8 | ..... | 18 20,8 | | | |
| | 3 7 | | 44 10 | — 9 | ..... | 18 22,8 | Squally | Thick with drift, zenith clear | *Max. easterly variation.* |
| | 3 50 | | 43 55 | — 9 | ..... | 18 5,7 | | | |
| | 5 10 | | 43 40 | — 9 | ..... | 18 22,7 | | | |
| | 6 00 | | 43 40 | — 9 | ..... | 18 14,5 | | | |
| | 7 10 | | 43 40 | —10 | ..... | 18 8,8 | | | |
| | 7 35 | | 43 40 | —10 | | | | | |
| | 7 50 | | 43 20 | —10 | .. To the left hand. .. | 18 6 | | | |
| | 9 30 | | 41 30 | — 9 | .. .. | 18 2,7 | N. Easterly | Hazy | |
| | 10 00 | | 38 40 | — 9 | .. .. | 18 18,5 | Squally | | |
| | 10 30 | | 38 30 | — 9 | | | | | |
| | 11 00 | | 43 30 | — 9 | .. .. | 17 56 | | | |
| | 11 30 | | 44 40 | — 8 | | | | | |
| | 0 5 | P. M. | 37 50 | — 6 | .. .. | 18 5 | | | |
| | 0 20 | | 30 00 | — 6 | | | | | |
| | 0 30 | | 28 45 | — 6 | ..... | ..... | ..... | . .. | *Max. westerly variation.* |
| | + 0 48 | | 25 10 | — 5½ | | | | | |
| | 1 20 | | 35 10 | — 5½ | ..... | 17 57 | | | |
| | 2 00 | | 39 00 | — 5 | ..... | 18 2 | | | |
| | 2 30 | | 32 10 | — 4 | | | | | |
| | 3 00 | | 38 20 | — 4 | ..... | 17 48 | | | |
| | 4 00 | | 39 30 | — 4 | ..... | 17 48,2 | | | |
| | 5 10 | | 42 00 | — 4 | ..... | 17 40,5 | | | |
| | 5 50 | | 51 10 | — 5 | ..... | 17 26,8 | | | |
| | 6 50 | | 49 30 | — 6 | ..... | 17 35,7 | Northerly | Hazy | |
| | 7 10 | | 50 20 | — 7 | | | Squally | low down | |
| | 7 48 | | 51 00 | — 8 | ..... | 17 25,2 | | | |
| | 9 30 | | 52 30 | — 8 | ..... | 17 44 | | | |
| | 10 00 | | 57 10 | — 8 | ..... | 17 50,7 | | | |
| | —10 30 | | 62 00 | — 9 | | | | | |
| | 11 00 | | 59 30 | — 9 | ..... | 18 00 | ..... | ..... | *Max. easterly variation.* |
| | 11 30 | | 58 20 | — 9 | | | | | |
| | 11 40 | | 56 20 | — 9 | ..... | ..... | Fresh and | Clear | |
| | Midnt | | 54 00 | — 9½ | ..... | 18 6,5 | Squally | over head | |

*March 22nd. North end of Needle to the S. 83° W.*

THE following summary of the observations at this point, is given here, merely to prevent breaking the preceding series: they were commenced at 6 o'clock in the morning, at which time the north end of the needle was at S. 83° 30′ W. where it remained until $\frac{1}{2}$ past $9^h$; it then moved to S. 85° W. and became nearly stationary until about $11^h\ 30^m$, at which time it was at S. 81° 30′ W. and soon after, I observed it vibrating rapidly in very small arcs, which were continued with different degrees of intensity for the space of a quarter of an hour. During this time, simultaneous observations on the times of vibration of a horizontal needle were made, and as great fluctuations were observed in the intervals of 10 vibrations, I have inserted them in detail, as follows, in order to show the variations of horizontal intensity which take place in short intervals, and to which must be attributed the irregular vibratory motion observed in this needle.

| Mean Time of Observation. | Intervals of 10 vibrat. | Remarks. |
|---|---|---|
| h. m. s. | m. s. | |
| 11 38 5,2 | 3 4,8 | It appears by these observations, that the intervals of 10 vibrations, exhibit changes of horizontal intensity to the amount of $\frac{1}{59}$th part of those intervals, in the space of quarter of an hour. |
| 41 10 | 3 3 | |
| 44 13 | 3 3,5 | |
| 47 16,5 | 3 2,5 | |
| 50 19 | 3 1,7 | |
| 53 20,7 | 3 1,8 | |
| 56 22,5 | | |

In the foregoing observations, when the north end of the needle was directed towards the east or west points of the compass, it will be seen, that the various deflections of the needle rendered it difficult to discover which way its north end had proceeded during the time of westerly daily variation.

This anomalous action of the needle exhibited itself so strongly on the 23d of February, that I was induced to compare the nature of some of its deflections, with simultaneous observations, on the times of vibration of a freely suspended horizontal needle; and as I found, in every instance of comparison, a decided relation between the changes of horizontal intensity, and these deflections, I began to watch the action of this needle more closely, at the times that fluctuations in the directive force of the horizontal needle, had hitherto been observed to take place; and from its indications, I frequently stated to the Gentlemen making the observations on horizontal intensity, what I considered would be the nature of the intervals they were about to obtain; which proving correct, no longer left any doubt on my mind, of the cause of these apparent irregularities. In order, however, to point out more satisfactorily the relation between the changes of horizontal intensity, and the various deflections of this needle, at other positions of its north end, I have annexed the observations on the times of performing 60 vibrations by a horizontal needle, taken during the same time; but this will not explain all the anomalies alluded to, without also stating, that the fluctuations which frequently took place in the intervals of 10 vibrations, were sometimes observed to compensate one another, so as, in the mean of sixty, to leave no

indications of such changes having taken place; and it is only on these occasions, that the expression for the magnetic intensity of the horizontal needle is at variance with the irregular motion of the neutralized needle.

On looking over the observations it will also be seen, that when the north end of the needle was directed to the southward, between N. 85° E. and S. 85° W. its motion during the time of westerly daily variation was generally towards the *left hand*, but when directed to the northward, between N. 85° E. and S. 85° W. its motion was then most commonly to the *right hand* (see the figure in Plate IV.); and that when held between N. 85° E. and north, a greater daily change obtained than at any of the other positions, amounting in one instance to 50 degrees; but when directed to S. 85° W. no daily variation, or at least a minimum, exhibited itself.

With respect to the effect produced on the needle when held between N. 85° E. and north, it appears, from observations on the times of vibrations of a horizontal needle, that an increased intensity generally took place about noon, at which time also, the maximum westerly daily variation generally happened; and as we have already seen, that the motion of the north end of the needle in this position, during the time of westerly daily variation, was to the *right hand*, or towards the magnetic meridian, the effect of an increased intensity would be to draw it still further in that direction, and therefore, produce the extraordinary amount noticed. But with the north end of the needle, held between S. 85° W. and north, where its motion is still to the *right hand* at the time of westerly daily variation, the effect of increased intensity then, would be to draw the north end of the needle to the

*left hand*, or towards the magnetic meridian; from whence it is inferred, that these contrary effects balance each other at S. 85° W. and produce what has hitherto been termed the line of minimum daily variation. Nevertheless it is a singular coincidence, that the *true bearing* of this line at Port Bowen (viz. S. 38° 4′ E.) agrees nearly with Mr. Barlow's determination at Woolwich. It would, however, be desirable to have other observations, at places differing much in magnetic position, before drawing any conclusions as to the probability of its dependance on some general cause; especially, since the needle after remaining absolutely stationary for three successive days at S. 85° W, commenced moving with its north end towards the *left hand*, or west point of the compass, at half-past three P. M. on the 27th of March; without any apparent cause whatever, and that it did not again become stationary during the rest of the observations at this point, which were continued until the 5th of April; in the course of which, as will be seen, its north end sometimes proceeded towards the *left*, and at others towards the *right hand*, during the time of westerly daily variation.

Whether this movement of the needle, on the 27th of March, took place in consequence of the changes of intensity in the opposing magnets (which were covered with snow), arising from the effects of temperature, or from the sudden variations of intensity of the horizontal needle which take place in short intervals of time, to which, I am most disposed to attribute it, is difficult to decide; it was not considered to be due to the effects of electricity, as there was no appearance of the Aurora * at the time, nor was

* The Aurora generally appeared about north by compass, extending in an arch

the existence of that phenomenon, in the atmosphere, detected by the electrometer.

Towards the end of May, however, I commenced another set of observations (at S. 85° W.), but the needle never became stationary throughout their continuance; its north end sometimes proceeding towards the north, at others towards the south, during the time of westerly daily variation, and that occasionally the needle was observed to vibrate in small arcs, as already noticed at its other azimuthal positions.

It will also be seen, on looking over the preceding observations, that the times of maximum westerly, and easterly daily variation, by this needle, differ on many occasions very considerably from those by the suspended needle: this difference it may be observed, arises from the circumstance of the observations on each needle not being made simultaneously, as well as from the minuteness of some of the phenomena escaping observation by the suspended needle; but which were elicited by this needle, proportionally to its reduced directive force. Besides these observations on the daily changes of the horizontal needle, I also attempted a similar set on the dipping needle, but the difficulty of adjusting the magnets was such, as to prevent me from obtaining any satisfactory results.

Port Bowen, July 1st, 1825.

from about N. E. to N.W. at an elevation of from 10 to 20 degrees, with streamers sometimes shooting towards the zenith. At times when it was brightest, although not very brilliant during any part of the winter, I have frequently watched this needle, without ever being able to detect a change, that could be ascribed to its influence.

VII. *A comparison of the diurnal changes of intensity in the dipping and horizontal needles, at Port Bowen. By* Lieutenant Henry Foster, *R. N. F. R. S. Communicated February 25, 1826.*

The following comparative observations on the intensity of the dipping and horizontal needles, were made with a particular object in view, which will be proper to explain before giving the details.

It was found by observation, that the intensity of the horizontal needle was hourly varying: this appeared by the results already given to this Society in a former paper: but it was doubtful, whether this variation of horizontal intensity of a needle, proceeded from an actual variation in the intensity of the terrestrial magnetism, or from a variation in the amount of its direction, as indicated by the dip itself.

The power of the horizontal needle varying as the cosine of the dip, a change to the amount of a few minutes in the dip, at places where it is very great, would be sufficient to explain all the variations of intensity observed in the horizontal needle, without supposing any change to have taken place in the intensity of the terrestrial magnetic force.

The variation in dip, however, if it did occur, was too small to be detected by direct observation; and I failed also, to render it sensible by the application of magnets, as stated in a former communication.

My object therefore in making the experiments contained

in the following Table, was to ascertain, by several series of vibrations made with the same needle, mounted alternately as a dipping needle, and as a horizontal one, whether or no a corresponding variation of intensity would manifest itself in these two positions respectively; as ought to be the case, if the diurnal changes of intensity in the horizontal needle proceeded from a general change of intensity in the terrestrial magnetic power. But on the other hand, if the force indicated by the dipping needle should be found to remain constant, then it would be equally clear, that the variations of intensity in the horizontal needle proceeded from an actual change of dip only.

As this question is of considerable importance in the theory of terrestrial magnetism, I regret that I had not an opportunity of making a more extended series of experiments of this kind; but, as far as they go, they certainly appear to indicate, that the alterations of intensity in the horizontal needle, are due rather to a daily change in the amount of the dip, than to any variation in the general intensity of the earth's magnetic force; although some change in this also is observable by the vibrations of the dipping needle This explanation of the cause of the change of horizontal intensity, it may be remarked, is consistent with the observations made in Europe, which likewise show an alteration of intensity in the horizontal needle during the day, but in a much less degree than at Port Bowen. Now, if the variation in question really proceed from a change of dip, to the amount of 3, 4, or 5 minutes of a degree, the change of intensity in the horizontal needle will be less and less obvious, as the dip decreases; but if it proceed from a change in the actual intensity of the earth's

magnetism, it ought to be constant in all parts of the world, which is contrary to observation.

In making these experiments, a dipping apparatus by DOLLOND, belonging to the Board of Longitude, was used. This instrument had a needle $11\frac{1}{2}$ inches in length, of an oblong shape, and rounded at its extremities; it was placed in the magnetic meridian, on a pedestal built of stones, and thus afforded the means for ascertaining the variations of intensity in the earth's magnetism, as indicated by the vibrations of the dipping needle. But as I had not a suitable apparatus for ascertaining the variations in horizontal intensity with the same needle; a cubical box 12 inches high was prepared, for which I was indebted to the kindness of Captain HOPPNER. This box had glass ends, to admit of the vibrations of the needle being observed, and contained at the bottom a horizontal circle, divided to every 5 degrees, for the purpose of measuring the arc of vibration; it was likewise fitted with a contrivance, by which the needle could be made to vibrate in any arc at pleasure, and the top was so constructed as to allow the suspension of the needle, to be placed directly over the centre of the circle. The suspension consisted of a few fibres of floss silk, attached to one of the extremities of the axis of the needle, just sufficient to sustain its weight, and several inches in length, to lessen the effects of torsion. This box was also mounted on a pedestal, similar to the one on which the dipping apparatus stood, and both were protected from the weather by being placed in a house built of snow. For observing the horizontal vibrations of this needle, a small telescope, having a vertical wire fixed in the focus of the eye-piece, was placed on a stand firmly frozen to the

ground, at the distance of about eight feet from the middle of the box, in the direction of the magnetic meridian: when the needle was at rest in its natural direction, a fine thread of light reflected from its end, was bisected by the vertical wire in the telescope; the telescope having a lateral sliding motion for the purpose of accomplishing this adjustment.

In making a set of these observations, the following mode was pursued: the needle being suspended horizontally, the adjustment of the telescope above described was first completed, after which, the needle was made to vibrate at the commencement, in an arc of 60 degrees, by the contrivance already alluded to; the time at which the reflected thread of light passed the wire in the telescope, was noted by means of a chronometer, and also at every tenth vibration following, until one hundred were completed: the needle was then removed from the box, and placed on its axis in the dipping apparatus; the time of its performing one hundred vibrations (commencing as before in an arc of 60 degrees) was in like manner noted; the passage of the central point in this case being determined by means of a lens, fixed over that part of the vertical circle to which the needle pointed, when freely supported on its axis and at rest. In this way all the results in the following Table have been obtained; it may not, however, be unimportant to state, that although the needle, in each of its different positions, always vibrated in the same arc at the commencement, viz. 60 degrees; yet the terminal arc, in either position, generally varied.

The Table is divided into two parts; the first contains the observations on the times of vibration of the needle in its horizontal position; and the second, those on it when used as

a dipping needle. In the first column of each part, is inserted the day of the month ; in the second, the hour and minute at which the observations were commenced ; the third column of each part, contains the mean time in seconds taken by the needle in its different positions, to perform one hundred vibrations ; and in the fourth, is inserted the temperature of the needle at the time of observation.

| 1st Part, Horizontal Needle. | | | | 2d Part, Dipping Needle. | | | |
|---|---|---|---|---|---|---|---|
| Date. | Time of Commencement. | Mean time in seconds, of performing 100 vibrations. | Temp. Fah$^{t}$. | Date. | Time of Commencement. | Mean time in seconds, of performing 100 vibrations. | Temp. Fah$^{t}$. |
| 1825. | h. m. | s. | ° | 1825. | h. m. | s. | ° |
| Feb. 12th | A.M. 6 35 | 2128,6 | — 17 | Feb. 12th | A.M. 11 58 | 405,4 | — 17½ |
| | 10 54 | 2127,6 | — 17 | | P.M. 0 30 | 405,7 | — 17½ |
| | P.M. 1 32 | 2079,9 | — 17 | 13th | P.M. 3 41 | 410,0 | — 17½ |
| 13th | P.M. 1 42 | 2103,1 | — 17 | 14th | A.M. 10 34 | 408,0 | — 19½ |
| | 2 54 | 2152,5 | — 17½ | | P.M. 0 12 | 406,5 | — 20 |
| 14th | A.M. 11 21 | 2088,2 | — 20 | | 8 33 | 408,4 | — 22 |
| | P.M. 1 14 | 2067,7 | — 20 | | 10 00 | 409,0 | — 21½ |
| | 9 00 | 2086,0 | — 22 | | 11 12 | 408,7 | — 21½ |
| 15th | A.M. 0 41 | 2107,0 | — 22 | 15th | A.M. 1 34 | 411,1 | — 22 |
| | 10 48 | 2115,5 | — 21 | | 10 32 | 410,0 | — 21 |
| | P.M. 8 44 | 2064,2 | — 23 | | 11 35 | 409,6 | — 21 |
| | 10 29 | 2071,0 | — 23 | | P.M. 8 9 | 409,2 | — 23 |
| 16th | A.M. 11 4 | 2077,4 | — 27 | | 9 43 | 408,7 | — 23 |
| 17th | A.M. 10 18 | 2071,0 | — 22 | | 11 15 | 409,2 | — 22 |
| | 11 12 | 2058,2 | — 21 | 16th | A.M. 10 38 | 409,9 | — 28 |
| | P.M. 0 29 | 2079,5 | — 20 | | 11 46 | 409,1 | — 27 |
| 19th | A.M. 10 18 | 2092,2 | — 22½ | 17th | A.M. 9 42 | 409,0 | — 22 |
| | | | | | 11 54 | 408,5 | — 20 |
| | | | | | P.M. 1 10 | 409,0 | — 20½ |
| | | | | 19th | A.M. 10 00 | 408,5 | — 23 |
| | | | | | 10 58 | 408,1 | — 22 |
| * Mean . . . . | | 2092,33 | — 20½ | * Mean . . . . | | 408,65 | — 21½ |

* The dip of the needle resulting from these elements is 87° 48′,8 N.

The above results show, that the mean of all the observed times which the horizontal needle required to make one hundred vibrations was 2092,33 seconds, but that differences appear in these times amounting to 94,3 seconds, or $\frac{1}{22}$ part of the interval; whereas in the dipping needle, in which the mean of the times required to perform one hundred vibrations was 408,65 seconds, the greatest difference is only 5,7 seconds, or $\frac{1}{72}$ part of the interval, which is a much less proportional change than the former. As an additional confirmation, however, that the intensity of the earth's magnetism is not subject to much variation, I have given in the following Table the results of observations I made on it at the same place in November, 1824, January and June, 1825. These exhibit the times in which the needle completed one hundred vibrations in the magnetic meridian, deduced from the mean of the times of its performing four hundred vibrations, with the face of the instrument on each side of the vertical, and the needle reversed on its axis in the two positions.

| Date. | Middle Time of Observation. | Mean time in seconds of performing 100 vibrations. | Temperature, Fah$^{t}$. |
|---|---|---|---|
| | h. m. | s. | o |
| November 8th | A. M. 10 20 | 404,94 | — 13½ |
| January 10th | A. M. 11 45 | 404,69 | — 22 |
| June 27th | A. M. 9 30 | 406,50 | + 47 |

These results also show, taking into consideration the different temperatures under which they have been obtained, that little or no change in the intensity took place, notwithstanding the observations were made at different hours of the day, as well as at different parts of the year.

Therefore, as has been stated, the change of intensity in the horizontal needle is due, principally, to a daily variation in the amount of the dip; not to a real change of intensity in the terrestrial magnetic force. This at least appears to be a legitimate deduction from the preceding observations; from which circumstance, and that of the daily variation in the direction of the horizontal needle, we are naturally led to the conception of a small variation in position of the magnetic axis, corresponding to a revolution of the polar point round its mean position as a centre, produced by the action of the sun, on the magnetism of the parts of the earth, successively exposed to its influence. And, moreover, it seems by no means improbable, that the annual variation of the position of the magnetic pole may ultimately be traced to the same universal cause.

I have not attempted to enter into any minute calculations on this subject, but I believe it will be found, that if the radius of the circle, described by the pole of the general magnetic axis of the earth during the day, be supposed to subtend at the centre an angle of 2 or $2\frac{1}{2}$ minutes, it will reconcile, to a considerable degree of precision, nearly all the observations on the daily variation of the direction, and daily change of intensity of the horizontal needle, made both in Europe and within the Arctic Circle. If, also, we suppose the magnetic north pole, during the passage of the sun over its meridian, when lying between the pole of the world and the sun, to advance more to the westward, or in a direction contrary to the rotation of the earth on its axis, than it returns to the eastward, or in the direction of rotation of the earth during the sun's passage over the opposite meridian, when the pole

of the world lies between the magnetic pole and the sun, then it follows, that in some certain number of years the magnetic north pole will perform a revolution from east to west round the pole of the earth, and produce an annual change in the variation of the compass in that direction, which is known to obtain. That this may be the case, is rendered probable, by considering that the sun at present approaches nearer to the magnetic north pole in its southern, than in its northern passage over the meridian, by twice the north polar distance of the magnetic pole; and although the reverse takes place on the south pole, yet, as the sun is longer on the northern than on the southern side of the equator, there will be a preponderance of action to carry the north pole forward to the westward, and consequently the south pole to the eastward, as is supposed to be the case by many eminent philosophers in this country.

However, these observations will, of course, require to be repeated in other parts of the world, before this hypothesis can be considered as fully confirmed by experiment.

In this concluding communication relative to our recent northern magnetic experiments, I beg leave again to express my obligations to Mr. BARLOW and to Mr. CHRISTIE. To Mr. CHRISTIE, for his kindness in permitting the observations on the dip and magnetic intensity to be made in his garden at Woolwich, and for the valuable assistance he rendered me in the equipment of the magnetical instruments supplied to the Expedition. To Mr. BARLOW, I stand indebted in a manner which I find it difficult to describe; indeed it is no more than due to the scientific liberality of this Gentleman to state, that on many occasions, when I have shown him my experiments

on the different magnetical subjects wherein I have been engaged, he has kindly given such a direction to my thoughts, as materially to assist me in arriving at the conclusions I have drawn.

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P.S. That the magnetic pole moves in an orbit round the pole of the earth, was first conceived, I believe, by Mr. DERHAM, as appears from the Appendix to Philosophical Essays, in three parts, by R. LOVETT, lay clerk of the cathedral church at Worcester, published in 1766, which was put into my hands by a friend, on mentioning to him the theoretical views advanced in this paper. This Appendix contains a brief theory of the north magnetic pole adopted by him from a passage in DERHAM's Physico-Theology, which I shall transcribe in Mr. DERHAM's own words, who, after stating the various discoveries of NORMAN, GELLIBRAND, and others, proceeds to say; "To these discoveries, I hope the reader "will excuse me if I add one of my own, which I deduced "some years ago, from some magnetical experiments and "observations I made; which discovery I also acquainted "our Royal Society with some time since, *viz.* that as the "common horizontal needle is continually varying towards "the east and west, so is the dipping needle varying up and "down, towards or fromwards the zenith, with the magne-"tick tendency describing indeed a circle round the pole of "the world, as I conceive, or some other point; so that if "we could procure a needle so nicely made, as to point ex-"actly according to its magnetick direction, it would in some

" certain number of years describe a circle of about 13*gr.*
" radius round the magnetick poles northerly and southerly.
" This I have for several years suspected, and have had some
" reason for it too; and three or four years ago, mentioning
" it at a meeting of our Royal Society, they were pleased to
" cause it to be entered in the Journals; but I have not yet
" been so happy to procure a tolerable good dipping needle,
" or other proper one to my mind, to bring the thing to
" sufficient test of experience; as in a short time I hope
" to do, having lately hit upon a contrivance that may do
" the thing."

Mr. LOVETT next proceeds to illustrate Mr. DERHAM's theory by appropriate diagrams, and then to compute the latitude of the magnetic pole from the best recorded observations at the time on the variation of the compass at two well known places. Having thus obtained 13° 51′ for the north polar distance of the magnetic pole, or radius of the orbit which it describes round the pole of the earth, he then fixes the year of no variation of the magnetic needle in London to be 1660, from the observations of Dr. HALLEY in 1672; and from a similar observation by Dr. BRADLEY in 1750, he deduces the longitude of the pole for that time, and by this interval of 90 years, he infers the progressive rate of the pole westerly to be in longitude 7° 7′ 12″ every ten years. With these data he has computed a table of variations of the compass for every ten years between 1660 and 1910, in which he has predicted, with near approximation to what has since been observed, considering the distance of time and want of correct knowledge of its quantity, not only the

amount of the variation, but the year in which the magnetic pole arrives at its maximum westerly position. He also states, that in 1912½ the magnetic pole will again be on the meridian of London, and that it requires 505 years, 215 days, 8 hours, and 24 minutes, to make a complete revolution round the pole of the world.

VIII. *Account of the repetition of Mr.* CHRISTIE'S *experiments on the magnetic properties imparted to an iron plate by rotation, at Port Bowen, in May and June,* 1825. *By Lieutenant* HENRY FOSTER, *R. N. F. R. S.; together with Mr.* CHRISTIE'S *remarks thereon.*

PREVIOUS to our leaving England in 1824, Mr. CHRISTIE stated to me that he had some time ago discovered singular magnetic properties to be imparted to iron by simply making it revolve about an axis, and that these properties were exhibited in the different deviations which a plate of that metal would cause in a horizontal needle, according as it was made to revolve gently by the hand in one direction or the opposite: wishing me also to pursue these experiments as opportunites offered, in the high magnetic latitudes we were likely to visit in H. M. S. Hecla. The memorandum with which he furnished me on this subject, suggested that the plate should be placed in certain magnetic positions to the compass; for which purpose, unfortunately, I had no proper instrument. Through the kindness, however, of Captains PARRY and HOPPNER, I was enabled to employ the carpenter of the Fury in constructing a suitable apparatus; and I feel much satisfaction in acknowledging my obligations to them, for the ready assistance they afforded me on this, as well as on other occasions. The instrument, which answered the purpose extremely well, is briefly described as follows. Plate V. A B, fig. 1, is the stand of the instrument, C D E F

Fig. 1.

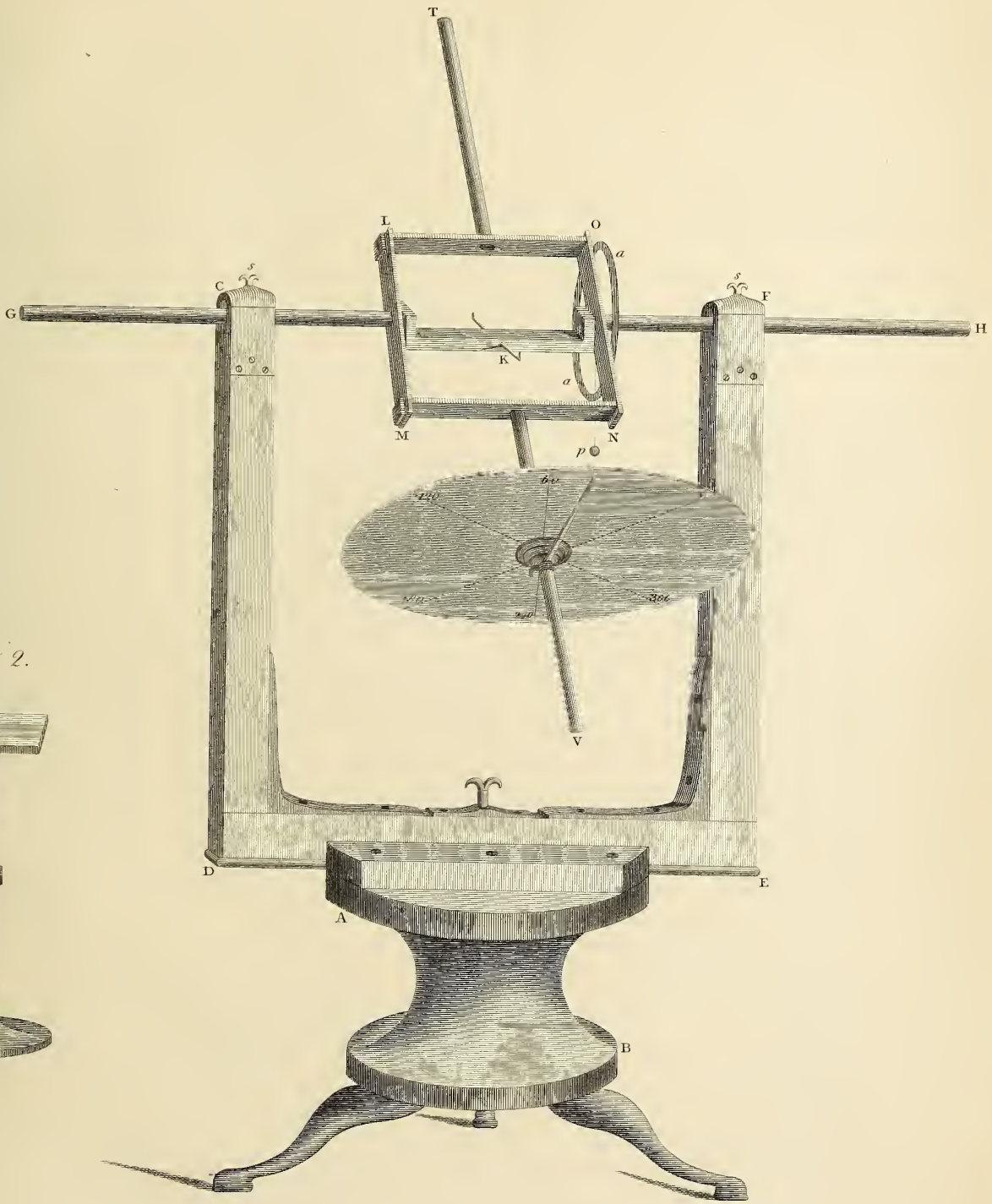


Fig. 2.

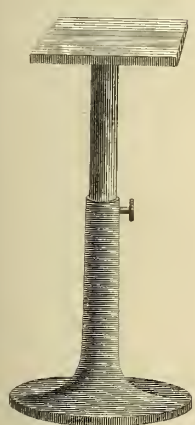

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*Fig. 3.*

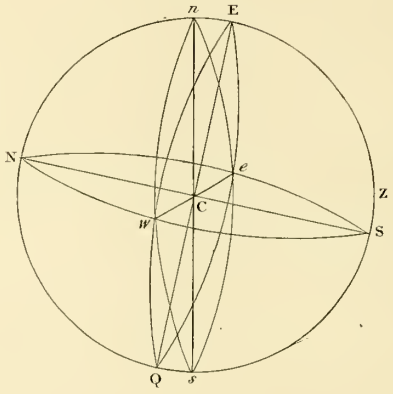



*Fig. 4.*

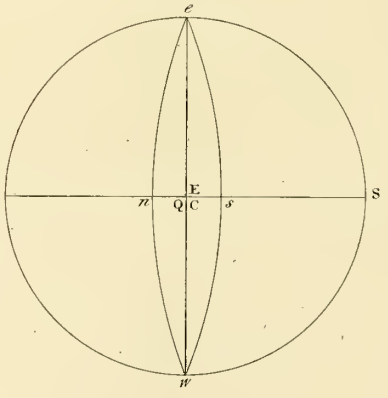
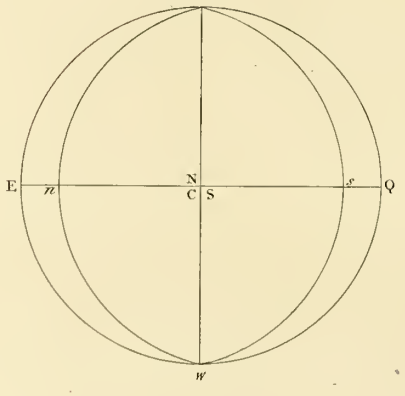



*Fig. 5.*



a wooden frame, across the upper part of which passes a copper bolt, G H, with clamping screws at *s s*. This bolt was flattened and bent down in the middle, as shown at K, where the compass was placed. L M N O is a copper frame, with two pins, T and V, inserted into it, to carry the circular iron plate, as shown also in the figure. It is obvious, that with this instrument I was enabled to place the iron plate in any latitude by means of the graduated circle *a a* and plummet *p*, while by turning the frame C D E F in azimuth, it might, in like manner, be placed in any longitude: in all these cases the plane of the plate being a tangent to the sphere. When it was required to place the plate, with its edge pointing to the centre of the needle, or its plane in the plane of the secondary to the equator and meridian, I then employed the small stand shown in fig. 2, which might be elevated to any height to bring the compass, which was placed on its top, to the required position. It was also employed when the plane of the plate coincided with that of the equator.

In order to understand the particular positions in question, it will be best to refer to figures 3, 4 and 5. Fig. 3, represents the sphere circumscribing the needle viewed on the plane of the meridian; 4, on the plane of the secondary; and 5, on the plane of the equator. In fig. 3, C is the centre of the compass, S N the magnetic axis or line of the dip, E *w* Q and *e* the equator, S E N Q the meridian, S *e* N *w* the secondary, *n w s e* the horizon, *n s* the horizontal magnetic meridian or axis of the horizontal needle, and *e c w* the east and west line. The points at which Mr. CHRISTIE wished observations to be made, were at E, S, Q, N, *e* and *w*, with the plane

of the plate a tangent to the sphere at each; that is, at E and Q the plate would revolve about the line E Q, and at S and N about the line S N, &c. But with the plane of the plate in the plane of the secondary, he was most desirous that observations should be made; and at the points *s*, *w*, N and *e*, fig. 4. I also made a set of observations at the points *e*, *w*, E, Q, fig. 5, the plane of the plate being in the plane of the equator.

In consequence of the extent of the changes in the daily variation, I was under the necessity of making the observations in a different manner from that adopted by Mr. CHRISTIE; they were in general made as follows.

The circular iron plate before mentioned, being divided into six equal parts, marked 0, 60, 120, 180, 240, 300, and the instrument above described so adjusted, that when the plate was placed on the copper pin T or V, its centre would occupy the position required; the plate was then placed on the pin, with the point 0, coinciding with the fixed mark or index, and the direction of the north end of the needle noted; after which the plate was made to revolve three times for instance, gently by the hand, its upper edge moving from east to west, and 0, being again brought to coincide with the index, the direction of the north end of the needle was again noted; and the same was done, after making the plate revolve in like manner from west to east: the difference between the first and second reading, gave the deviation due to rotation from east to west; and the difference between the first and third, that due to rotation from west to east. The plate was then moved to a distance, in order that an allowance, if necessary, might be made for the change in the direction of the needle caused by the daily variation. After this, the plate

was again fixed in its proper position, with its point 60 coinciding with the index, and the deviation caused by rotation obtained in the same way, and in like manner for the rest of the points 120, 180, 240, 300, 0, in their order, and likewise in the order of succession 300, 240, 180, 120, 60, 0.

The various effects due to the rotation of the plate, when placed in the different magnetic positions above specified, are noted in the tabulated experiments at each: it may nevertheless be proper here to state the nature of these deviations, in the different adjustments of the plate to the compass; as for instance, in the experiments with its plane in the plane of the secondary, placed at S and N, fig. 4, 16,4 inches from the centre of the needle, the deviations were invariably to the east; when its upper edge was made to revolve from west to east, and to the west in the opposite rotation: at the points *e* and *w* effects just the contrary were produced, *viz.* that while the upper edge of the plate revolved from west to east, the deflections were to the west, and in the opposite rotation to the east; from which circumstance it was inferred, that there must be an intermediate latitude where no deviations of the needle would be produced by rotation, and this by experiment was ascertained to be latitude $52^{\circ}\frac{1}{3}$ North and south, as stated in the observations. The effects of rotation of the plate on the needle when placed with its plane a tangent to the sphere, at the points E and Q, fig. 3, were considerable, and always to the west, the upper edge revolving from east to west; but at the other positions N S *e* and *w*, no effect due to rotation was observable. The maximum effect of rotation (amounting to 108° in one instance) was produced with the plate in lat. $52^{\circ}\frac{1}{3}$ N, long. 270°, thirteen inches from the

centre of the needle, and also in lat. $52^{\circ}\frac{1}{3}$ S, long. 90°. These unusual quantities are doubtless attributable to a circumstance I had previously noticed in the voyage of H. M. S. Griper to Spitsbergen, where it was found, that with the ship's head to the southward, the iron in the vessel neutralized the needle, or nearly so, and thereby left it free to obey any new force impressed upon it; and so in these cases. In both the positions specified, it will be seen that the needle was nearly neutralized by the plate, and therefore the effect of rotation was more strongly exhibited; the character of these deflections were generally to the east of zero, or reading previous to rotation: but when the action of the plate co-operates with that of the earth, the contrary to the above effect of rotation of course takes place. In this case the horizontal intensity of the needle being increased, the effect produced by rotation is diminished, as will be seen when the plate was placed in lat. $52^{\circ}\frac{1}{3}$ N, long. 90°, and in lat. $52^{\circ}\frac{1}{3}$ S, long. 270°: in both these positions the upper edge being made to revolve from east to west, the needle was deflected to the west. The centre of the plate placed in lat. $52^{\circ}\frac{1}{3}$ N, long. 0°, and in lat. $52^{\circ}\frac{1}{3}$ S, long. 180°, the upper edge revolving from south to north, the deviations were to the west, and of greater amount than those to the east, caused by the rotation of the plate in the opposite direction. Effects, however, precisely contrary to these last mentioned were produced by the revolutions of the plate, when fixed with its centre in lat. $52^{\circ}\frac{1}{3}$ S, long. 0°, and in lat. $52^{\circ}\frac{1}{3}$ N, long. 180°. When the plate was adjusted with its plane in that of the equator, and its centre in the various magnetic positions specified in the experiments, very trifling deviations due to rotation were

produced, and those probably arose from errors in the adjustments themselves.

The following effects were also noticed in the course of these experiments, *viz.*

(1st.) In the different adjustments of the plate, it was found in general that the amount of the deviation from zero, due to rotation in the same direction, when the several points on the plate coincided with the fixed mark, was greater or less, according as the plate had been adjusted on the pin in the successive observations, with the several points coinciding with the fixed mark in the order 0, 60, 120, 180, 240, 300, or in the order of succession 300, 240, 180, 120, 60, 0; although the whole amount of deviation due to rotation in opposite directions, was not sensibly affected by this circumstance. This effect is fully pointed out in Table I. and its probable cause suggested.

(2nd.) *One slow* revolution of the plate produced as much deviation as *three or more turns; quick* revolutions were always attended with comparative trifling deflections of the needle. The plate retained the magnetic properties imparted to it by rotation, while remaining on the axis, round which it was made to revolve;* but on its being placed horizontally on the ground, (which in this place was nearly in the plane of the magnetic equator), the effect was destroyed in the course of 10 or 15 minutes; implying that *time* is requisite for the complete developement of magnetism in the plate, as well as for the displacement of it, after it has been produced.

* This is inferred from the observations of $1\frac{3}{4}$ hour only, during which time the direction of the daily variation needle was noted, and compared with that under the influence of the plate.

(3rd.) Oscillating the plate in different arcs, with its plane a tangent to the magnetic sphere, after the manner of the balance wheel of a watch, caused considerable deviations of the needle. In this experiment also, *quick* vibrations produced the least effect.

In Table I. the observations are given at length, in order to exhibit the peculiar effect, already noticed, arising from the order of succession in which the points 0, 60, 120, &c. were in the first instance brought to coincide with the fixed mark. The second column shows this order, and the third column, the zero or reading of the north end of the needle when the plate was placed on the pin previous to rotation.

## I.

Table of the changes in the zero, or reading of the north end of the needle, and of the deviations due to the rotation of a circular iron plate (18 inches in diameter), its plane being in the plane of the secondary to the equator and meridian, and its centre in latitude 0°, longitude 180°, at the distance of 16,5 inches from the centre of the needle.

| Temperature. Fahrenheit. | Points on plate brought to coincide with fixed mark on pin, before and after rotation. | Zero, or reading of north end of needle before rotation. | Readings of north end of needle after plate had revolved, its upper edge. | | Deviation of north end of needle due to rotation of plate, its upper edge. | | Deviation due to rotation in opposite directions. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| | | | From East to West. | From West to East. | From East to West. | From West to East. | | |
| ° | ° | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | |
| +14 | 60 | 1 20W | 10 20 E | 3 00W | 11 40 E | 1 40W | 13 20 | 3 gentle turns. |
| | 120 | 12 40 E | 20 20 E | 6 40 E | 7 40 E | 6 00W | 13 40 | |
| | 180 | 1 00 E | 12 10 E | 0 30W | 11 10 E | 1 30W | 12 40 | |
| | 240 | 3 30W | 1 45 E | 11 55W | 5 15 E | 8 25W | 13 40 | |
| | 300 | 13 15W | 3 15W | 15 35W | 10 00 E | 2 20W | 12 20 | |
| | 0 | 0 50W | 4 00 E | 9 30W | 4 50 E | 8 40W | 13 30 | |
| +13 | 60 | 3 10W | 10 00 E | 3 50W | 13 10 E | 0 40W | 13 50 | |
| | 120 | 12 20 E | 21 30 E | 7 40 E | 9 10 E | 4 40W | 13 50 | |
| | 180 | 4 30 E | 15 00 E | 1 30 E | 10 30 E | 3 00W | 13 30 | |
| | 240 | 5 10W | 1 20 E | 11 35W | 6 30 E | 6 25W | 12 55 | |
| | 300 | 17 40W | 5 20W | 19 20W | 12 20 E | 1 40W | 14 00 | |
| +13 | 0 | 2 10W | 3 50 E | 10 00W | 6 00 E | 7 50W | 13 50 | |
| +13,3 | Means | 1 23W | 7 38$\frac{4}{12}$ E | 5 47$\frac{1}{12}$W | 9 1$\frac{3}{12}$ E | 4 24$\frac{2}{12}$W | 13 25$\frac{5}{12}$ | |
| | 300 | 6 40W | 5 00W | 17 45W | 1 40 E | 11 5W | 12 45 | 3 gentle turns. |
| | 240 | 2 50 E | 3 40 E | 9 30W | 0 50 E | 12 20W | 13 10 | |
| | 180 | 13 30 E | 15 20 E | 1 30 E | 1 50 E | 12 00W | 13 50 | |
| | 120 | 14 55 E | 19 35 E | 5 25 E | 4 40 E | 9 30W | 14 10 | |
| | 60 | 9 45 E | 9 45 E | 3 20W | 0 00 | 13 5W | 13 5 | |
| +14 | 0 | 3 10W | 3 50 E | 9 10W | 7 00 E | 6 0W | 13 0 | |
| | 300 | 4 40W | 3 40W | 16 40W | 1 00 E | 12 0W | 13 0 | |
| | 240 | 3 30 E | 3 15 E | 11 15W | 0 15W | 14 45W | 14 30 | |
| | 180 | 10 50 E | 13 00 E | 0 20 E | 2 10 E | 10 30W | 12 40 | |
| | 120 | 13 15 E | 18 15 E | 4 15 E | 5 00 E | 9 00W | 14 00 | |
| | 60 | 2 00 E | 9 00 E | 3 10W | 7 00 E | 5 10W | 12 10 | |
| +14 | 0 | 5 45W | 4 50 E | 7 20W | 10 35 E | 1 35W | 12 10 | |
| +14 | Means | 4 11$\frac{8}{12}$E | 7 39$\frac{2}{12}$ E | 5 33$\frac{4}{12}$W | 3 27$\frac{6}{12}$ E | 9 45W | 13 12$\frac{6}{12}$ | |

On looking over the several columns of the preceding Table, it will be seen that the zeros for the same point changed according as the points on the plate were made to coincide with the fixed mark or index in the order of 0, 60, 120, 180, &c. or in the order of 0, 300, 240, 180, &c. and also, that when they were applied in the order of 0, 60, 120, 180, &c. the easterly deviation produced by the rotation of the plate from east to west, was greater than the westerly deviation caused by its rotation from west to east; and that precisely the reverse took place when the points of the plate were applied in the order of 300, 240, 180, &c. From the manner in which the deviations due to the rotation of the plate were obtained, for each order of succession of the points, marked on its surface; it is obvious that the plate made two complete revolutions during the series; the first in the direction from west to east, in consequence of the manner in which the points were numbered on the plate, and the second from east to west; to which circumstance is attributed the change that is observed in the zeros, or readings before rotation, as well as, that the amount of the deviations, due to rotation from east to west, and from west to east, change in their respective columns.

Observations similar to those in Table I. were made when the centre of the plate was in the several situations indicated in Tables II. and IV.; but as it was considered that giving them in detail would unnecessarily extend this communication, the mean results have been collected in these Tables, and the observations at length deposited with the Royal Society, in order that they may be consulted should any of the results appear of sufficient interest to require minute investigation at a future time.

## II.

Table of the mean deviations due to the rotation of the plate, its plane being in the secondary to the equator and meridian, and its centre at the distance of 16,5 inches from the centre of the needle.

| Position of the plate's centre. | | Zero, or mean readings of north end of needle before rotation. | Mean of readings of north end of needle after plate had revolved, its upper edge from | | Mean deviation of north end of needle due to rotation of plate, its upper edge from | | Mean deviation due to rotation in opposite direction. | Temperature. Fahrenheit. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| Lat. | Long. | | East to West. | West to East. | East to West. | West to East. | | | |
| ° | ° | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° | |
| 0 | 0 | 0 35 W | 10 26 E | 4 42 W | 11 1 E | 4 7 W | +15 8 | +16½ | 1 turn in 1 min. |
| 0 | 180 | 1 24 E | 7 39 E | 5 40 W | 6 15 E | 7 4 W | +13 19 | +13½ | 3 turns, slow. |
| 52⅓ S | 0 | 69 6 W | 68 51 W | 68 57 W | 0 15 E | 0 9 E | + 0 6 | +12 | 1 turn in 1 min. |
| 52⅓ S | 180 | 69 7 E | 69 12 E | 69 12 E | 0 5 E | 0 5 E | 0 0 | +12 | 1 turn in 1 min. |
| 52⅓ N | 0 | 71 4 E | 70 59 E | 70 47 E | 0 5 W | 0 17 W | + 0 12 | +18 | 2 turns in 2 min. |
| 52⅓ N | 180 | 71 1, W | 71 6 W | 71 8 W | 0 9 E | 0 7 E | + 0 2 | +18 | 1 turn in 1 min. |
| 90 S | | 1 00 E | 0 55 W | 4 37 E | 1 55 W | 3 37 E | − 5 32 | +17 | 3 turns, slow. |
| 90 N | | 0 22 E | 3 19 W | 4 6 E | 3 41 W | 3 44 E | − 7 25 | +12 | 1 turn in 1 min. |

It appears from these observations, that in latitude $52^{\circ}\frac{1}{3}$ North or South, the deviation due to rotation nearly vanished; but I do not profess to have got the latitude of this point to any great degree of accuracy, the nature of the construction of the instrument used, not admitting of the measurements from the centre of the plate, to that of the needle, being taken sufficiently near for that purpose; but I think it is obtained within the limits of a degree.

## III.

Table of the deviations due to rotation of the plate, its plane being in the plane of the equator, and its centre 15 inches from that of the needle.

| Position of the centre of plate | Lat. = 0° Long. = 0° | | Lat. = 0° Long. = 90° | | Lat. = 0° Long. = 180° | | Lat. = 0° Long. = 270° | | Temperature. Fahrenheit. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| Direction of rotation of upper edge of plate | From East to West. | From West to East. | From East to West. | From West to East. | From East to West. | From West to East. | From East to West. | From West to East. | | |
| Points on plate coinciding with fixed mark. 0 | ° ′ 12 15 E | ° ′ 12 00 E | ° ′ 4 0 E | ° ′ 4 20 E | ° ′ 6 20 E | ° ′ 6 00 E | ° ′ 7 0 E | ° ′ 7 00 E | ° +18 | 3 gentle turns |
| 60 | 14 00 E | 13 45 E | 6 10W | 5 40W | 9 30 E | 8 40 E | 3 30 E | 3 40 E | | |
| 120 | 17 20 E | 17 10 E | 4 30W | 4 00W | 17 00 E | 16 40 E | 4 20 E | 4 20 E | .... | |
| 180 | 13 30 E | 13 20 E | 3 00W | 3 00W | 8 00 E | 7 40 E | 1 40 E | 1 40 E | | |
| 240 | 11 40 E | 11 45 E | 0 30 E | 0 30 E | 6 20 E | 6 00 E | 7 20 E | 7 20 E | | |
| 300 | 3 40 E | 3 40 E | 3 10 E | 3 10 E | 2 40 E | 2 20 E | 5 55 E | 5 50 E | +18½ | |
| Means . | 12 4⅙ E | 11 56⅔ E | 2 0W | 1 20W | 8 18⅓ E | 7 53⅓ E | 4 57½ E | 4 58⅓ E | +18¼ | |
| Deviations due to rotation in opposite directions | + 0° 7½′ | | — 0° 40′ | | + 0° 25′ | | — 0° 0⅚′ | | | |

The amount of deviations caused by rotation in this adjustment of the plate to the compass, being so small and irregular, they may be considered as due to the circumstance of the plate not accurately occupying the place assigned to it, since the slight inequalities of the surface of the plate did not admit of the pivot of the needle being absolutely placed in its plane produced.

The character + is prefixed to those deviations, the direction of which, were towards that point, from whence the upper edge of the plate was first turned, and — when the contrary.

## IV.

Table of the mean deviations due to the rotation of the plate, its plane being a tangent to the sphere, and its centre at the distance of 13 inches from the centre of the needle.

| Position of the plate's centre. | | Zero, or mean reading of north end of needle before rotation. | Mean of readings of north end of needle after plate had revolved, its upper edge. | | Mean deviation of north end of needle due to rotation of plate, its upper edge | | Mean deviation due to rotation in opposite directions. | Temperature. Fahrenheit. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| Lat. | Long. | | From East to West. | From West to East. | From East to West. | From West to East. | | | |
| ° | ° | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° | |
| 0 | 90 | 0 28 E | 3 12W | 4 2 E | 3 40W | 3 34 E | + 7 14 | + 7½ | 3 turns, slow. |
| 0 | 270 | 1 20 E | 3 40W | 3 14 E | 5 00W | 1 54 E | — 6 54 | + 9½ | 3 turns. |
| 52⅓ S | 90 | 28 52W | 27 52W | 3 32 E | 1 00 E | 32 24 E | +31 24 | +34 | 1 turn in 1 min. |
| 52⅓ S | 270 | 1 05 E | 0 10W | 1 48 E | 1 15W | 0 43 E | — 1 58 | +32 | 1 turn in 1 min. |
| 90 S | | 1 13W | 1 20W | 0 57W | 0 7W | 0 16 E | — 0 23 | +10 | 3 turns. |
| 52¼ N | 90 | 2 11 E | 1 8 E | 3 3 E | 1 3W | 0 52 E | + 1 55 | +31½ | 1 turn in 1 min. |
| 52⅓ N | 270 | 7 2W | 15 43W | 18 35 E | 8 41W | 25 37 E | — 34 18 | +32 | 1 turn in 1 min. |
| 90 N | | 1 52 E | 1 40 E | 1 42 E | 0 12W | 0 10W | + 0 2 | +10 | 3 turns. |
| | | | From Nor. to South. | From Sou^h to North. | From Nor. to South. | From Sou^h to North. | | | |
| 0 | 0 | 1 8 E | 1 8 E | 1 8 E | 0 00 | 0 00 | 0 00 | + 9½ | 3 turns, slow. |
| 0 | 180 | 1 27 E | 1 33 E | 1 30 E | 0 6 E | 0 3 E | — 0 3 | +10 | 3 turns. |
| 52⅓ S | 0 | 42 4W | 41 42W | 40 00W | 0 22 E | 2 4 E | — 1 42 | +35 | 1 turn in 1 min. |
| 52⅓ S | 180 | 45 35 E | 44 31 E | 42 35 E | 1 4W | 3 00W | — 1 56 | +32 | 1 turn in 1 min. |
| 52⅓ N | 0 | 44 36 E | 44 12 E | 42 19 E | 0 24W | 2 17W | + 1 53 | +33 | 1 turn in 1 min. |
| 52⅓ N | 180 | 43 8W | 41 53W | 40 21W | 1 15 E | 2 47 E | + 1 32 | +36 | 1 turn in 1 min. |

Some observations similar to these were made with the centre of the plate at the distance of 16 inches from that of the needle, in which the peculiar effects, already pointed out in this experiment, were exhibited with greater regularity, though to a less extent; but as the whole series was not completed, they have been omitted here, and are deposited along with other observations on the effects produced on the needle by oscillating the plate in different arcs.

HENRY FOSTER.

Port Bowen, July 12, 1825.

## *Mr.* CHRISTIE'S *Remarks on the repetition of his experiments by Lieut.* FOSTER, *at Port Bowen, in* 1825.

HAVING a considerable time previous to the sailing of the late North-Western Expedition, in 1824, discovered that peculiar magnetic effects were produced in iron by rotation, I was desirous of having some of the experiments which I had made, repeated under the very interesting circumstances, as connected with magnetic phenomena, in which that expedition was likely to be placed. Mr. FOSTER readily offered to do this; and I feel happy in having this opportunity of acknowledging my obligations to him for the zealous and careful manner in which he performed the task which he had so kindly undertaken.

The peculiar effects produced on the magnetic needle by the rotation of an iron plate, of which I have given an account in a Paper published in the last volume of the Transactions, are in this latitude (magnetic) rather minute; but I expected that in the high magnetic latitudes likely to be visited by the expedition, these effects being increased in the inverse ratio of the cosine of the dip, they would become very conspicuous; and that some phenomena which here, from their extreme minuteness, would escape observation, in those latitudes would be easily observable. The result has fully answered the expectations which I formed: at Port Bowen, where the dip is more than 88°, the phenomena were exhibited on so striking a scale, and the interest which they excited was such, that Mr. FOSTER devoted much more time

to their investigation than I could have at all contemplated, knowing how fully his time must be otherwise occupied. To those who have previously read my Paper on this subject in the Transactions, the general accordance of the results in the foregoing tables, and those which I obtained, must be quite manifest; as however they exhibit some differences, I shall here briefly point out the agreement between the original experiments and this repetition of them, and likewise those discordances, and at the same time indicate what I consider to be the cause of some of these apparent discrepances.

In all the observations which I made, the deviations of the needle due to the rotation of the plate, depended both in extent and character, not upon the situation of the plate with respect to the axis and equator of the horizontal needle itself, but upon its situation with reference to the axis and equator of an imaginary dipping needle having its centre coinciding with that of the horizontal needle; and this appears most clearly to have been the case at Port Bowen.

In every instance the direction of the deviation due to rotation was the same at Port Bowen as I had found it here, the relative positions of the plate and needle, and the direction of rotation being the same in the two cases.

When the plane of the plate was in the secondary to the equator and meridian, I had found that the mean deviation due to rotation in latitude 0 was + 1° 36′ and in latitude 90, — 0° 45′: at Port Bowen the corresponding deviations were + 14° 14′ and — 6° 28′, which are as nearly in the same ratio as we could expect, considering the irregularities which take place in the individual observations in the latter case.

The situation of the point where the deviation due to rotation vanishes, is somewhat different in the two cases; Mr. FOSTER'S observations giving its latitude $52^{\circ}\frac{1}{3}$ and mine $54^{\circ}\frac{3}{4}$. The method by which Mr. FOSTER was under the necessity of determining the situation of the plate's centre, as referred to that of the needle, did not, as he states, admit of considerable accuracy, but the errors to which it was liable would scarcely account for the difference in the two cases. I cannot attribute this difference to errors in estimating the situation of the plate's centre in my own observations, since this was determined on the graduated limb of the instrument by the index on the arm on which the plate was carried, and the effect of any error of centering in the compass would be counteracted by the opposite readings. As, however, the situation of this point is by no means an indifferent question in the theoretical investigation of the phenomena dependant upon rotation, I shall, when I have sufficient leisure, repeat my observations.

When the plane of the plate was a tangent to the sphere, and its centre in the meridian, I had found that the deviation due to rotation vanished when the plate's centre was at the pole, and was a maximum when in the equator: according to Mr. FOSTER'S observations it likewise vanishes at the pole, but the maximum takes place at a point intermediate to the equator and south pole in longitude 90°, and to the equator and north pole in longitude 270°. The situation of the point of maximum deviation at Port Bowen, I have no doubt arose, as I pointed out to Mr. FOSTER, from this circumstance, that when the centre of the plate is in south latitude in longitude 90°, or in north latitude in longitude

270°, the directive intensity of the horizontal needle is diminished by the attraction of the iron plate; and although this diminution would produce effects scarcely observable here, where the intensity of the horizontal needle is great, and the deviation due to rotation very small, yet when the case is reversed, as in the Port Bowen observations, the effect will be so sensible, that the increase in deviation from this cause will much more than counterbalance the diminution which arises from the centre of the plate being nearer to the pole. The effects that would be produced under these circumstances will be most evident, by considering how a dipping needle would be affected, and referring its deviations to the horizontal plane, remembering that in all cases an increase of dip causes an increase in horizontal deviation, and the contrary. When the centre of the plate is in south latitude longitude 90°, and in north latitude longitude 270°, the attraction of the plate tends to increase the dip, and to diminish it when in south latitude longitude 270°, and north latitude longitude 90°; so that in the former cases the deviation will be increased from this cause, and in the latter diminished. This effect was so great that in one instance the zero, or reading of the north end of the needle previous to rotation, corresponding to the point 240 on the plate, was 97° W, 36° E, after rotation in one direction, and 144° E, after rotation in the other, giving no less than 108° for the deviation due to rotation in opposite directions: corresponding to the point 180 on the plate, these were 86° 40′ E, 42° 10′ W, and 20° 10′ W, giving only 22° for the deviation due to rotation. By referring to Table I. in my Paper, it will be seen that there are indications of the same effect,

since in longitude 90°, the deviations in south latitude are greater than the corresponding ones in north latitude, and the reverse takes place in longitude 270°; but as the differences are very small, I, at the time of making the observations, rather attributed them to errors in the adjustment, than to any other cause.

When the centre of the plate was in the secondary to the equator and meridian, and its plane a tangent to the sphere, I had found the deviation due to rotation so small, that it might be considered to vanish: at Port Bowen, however, the absolute deviation was so great, that in some parts of this circle the deviation due to rotation became sensible; and it would appear that the locus of the points where this deviation vanishes is a line of double curvature, passing from the south pole on each side, a little north of the secondary, down to its intersection with the equator, and then a little south of the secondary to the north pole. The signs which I have prefixed to the deviations in Table IV. of Mr. FOSTER'S observations, indicate the course of this curve.

The whole of the results in Mr. FOSTER'S observations perfectly agree with the law which I have given in my Paper as embracing all the phenomena dependant upon rotation, and even the differences which I have noticed between my own observations and these, are precisely such as we should expect, according to this law, to be observable in a change of the complement of the dip from 20° to 2°.

The results obtained by the repetition of my experiments at Port Bowen, prove that the phenomena depending on rotation are by no means unimportant as connected with the practical problem of correcting the attraction of a ship on

the compass by means of an iron plate. Having observed the effects that were produced on the needle by the rotation of an iron plate previous to the sailing of the Leven and Barracouta, in the spring of 1822, these vessels being furnished with correcting plates, I communicated the discovery to Mr. BARLOW, and stated that probably the correction might be sensibly affected by it, unless rotation, in applying the plate, were prevented, by having the pin so formed that the plate could only be slid on. The preceding observations prove clearly the importance of attending to this, especially in high magnetic latitudes, should circumstances require the removal and replacing of the plate, since there can be no doubt, from the magnitude of the deviations arising from rotation, observed by Mr. FOSTER, that if in replacing the plate, it were made to revolve, although it might be in precisely the same situation as before, its magnetism would be so materially changed, that the attraction of the ship would no longer be corrected by it. Should such a circumstance take place, it may be proper to mention that the plate would be restored nearly to its original state, by allowing it to remain for some time with its plane in that of the magnetic equator.

S. H. CHRISTIE.

Royal Military Academy,
10th January, 1826.

IX. *Observations to determine the amount of Atmospherical Refraction at Port Bowen in the Years* 1824-25. *By Captain* W. E. PARRY, *R. N. F. R. S. Lieutenant* HENRY FOSTER, *R. N. F. R. S. and Lieutenant* J. C. ROSS, *R. N. F. L. S.*

To ascertain correctly by actual observation the amount of atmospherical refraction at low altitudes and at various states of the barometer and thermometer, is a problem which has long occupied the attention of practical astronomers; and many elaborate theories have also been given to explain the anomalies which have hitherto attended the most careful observations.

In Mr. IVORY's Paper, printed in the Philosophical Transactions for 1823, he states (page 495), that his table of refractions has been constructed merely with the view of comparing the theory in the paper with observation. He adds, however, "that it would be more satisfactory to determine "the same quantity ($f$) by the comparison of many observed "refractions at low altitudes between the distances of 85 "and 88 degrees from the zenith; and by this means a "table might be constructed that would be deserving of "greater confidence."

With a view, therefore, to supply the desideratum alluded to, three distinct series of observations were made at Port Bowen, by Captain PARRY, Lieutenant FOSTER, and Lieutenant Ross; the details of which are given in the following Paper.

Various methods suggested themselves for the determination of this question. The first was to measure the zenith distance of known stars at a given moment, with the repeat-

ing circle, and then to have computed the true altitude; whence the actual refraction might have been deduced.

The difficulties, however, attending the use of the repeating circle, during the winter of the polar regions, have already been alluded to on several occasions, in the accounts of the two preceding voyages of discovery. The most material of these consist in the extreme contraction of the spirit in the long level, when filled in the usual way; the instantaneous freezing of the breath or other vapour on the glasses, obliging the observer to hold his breath during each observation; and the pain, amounting to the sensation, and producing the effects of burning consequent on touching intensely cold metal with the naked hand. The first of these was obviated, on the present occasion, by inserting a larger quantity of spirit than usual, so as to keep both ends of the bubble in sight, even during the most intense cold: this latter circumstance, however, afforded the opportunity of remarking an increased sluggishness in the level at very low temperatures, arising possibly from a certain degree of thickening in the spirit, which required the instrument to stand unmoved for at least two minutes after the contact had been made, in order to insure an accurate reading. It is unnecessary to point out, how unfavourable to minute accuracy this circumstance must prove, in observing an object having quick motion, either in altitude or in azimuth. A set of zenith distances, consisting of only eight observations, cannot, indeed, under such circumstances, be satisfactorily obtained in less than thirty-five or forty minutes. If to the difficulties already mentioned be added the annoyance sometimes experienced by the extinction of the lamp for illuminating the wires during an obser-

vation, in consequence of the freezing of the oil ; the frequent occurrence of snow drift ; and the haze which usually hangs near the horizon during a Polar winter, it must be admitted, that the repeating circle is not calculated, under such circumstances, either for obtaining numerous observations, or for ensuring the degree of accuracy indispensibly requisite in observations for determining the amount of atmospherical refractions.

Another method was suggested by Captain KATER, in April, 1824, which is explained in the following words :

" Select a star which passes the zenith, and when this star " and the Pole star are at the same altitude, take the distance " between them by means of the repeating reflecting circle ; " do the same when the star is in the zenith, and also when " upon the meridian under the Pole. From the first observa- " tions the true zenith distance of the stars may be readily " obtained. By observations made when the star is in the " zenith, the absolute refraction of the Pole star will be " given, and from the observations made when the star is " under the Pole, the refraction at that altitude can be easily " deduced. Pursue the same method with other stars, care- " fully marking at each observation the *time* and state of the " *barometer* and *thermometer*. We shall thus be furnished with " data, from which the refraction at the various altitudes can " be computed with facility and accuracy."

On considering, however, the difficulties already detailed in the use of the repeating circle, which rendered it impossible to take advantage of this ingenious suggestion of Captain KATER ; it occurred to Lieutenant FOSTER, that a more simple and accurate method of determining the amount of refraction,

would be to observe the setting of stars within certain limits of azimuth, behind the high land which encircles this harbour, and then determining at leisure the zenith distance of that part behind which the star set. As the ruggedness of the land, however, combined with the frequent alteration of the star's azimuth, would materially affect results thus obtained; Captain PARRY proposed, as a modification of this idea, to place a board edge-wise, and strictly horizontal, on the spot behind which the star set, thus rendering it unimportant upon what part of the board the occultation of the object took place, as well as affording more ready means of obtaining its apparent altitude.

Two boards were accordingly fixed with all possible firmness and accuracy upon a neighbouring hill, to the westward of the observatory, for observing the setting of $\alpha$ Aquilæ and Arcturus respectively, the board for the former being on a N $75°\frac{1}{2}$ W bearing, distant 924 feet, and for the latter N 40° W, 1590 feet.

The observations by Captain PARRY, given in Tables II. and VI., were made with a small theodolite, having its legs immoveably fixed by freezing, across a cask filled with sand; those in Table IV. by a ship telescope, two feet in length, securely attached to the cask itself, and having no motion whatever.

Lieutenant FOSTER's observations contained in Tables VIII. to XI. inclusive, were made with a small repeating circle by DOLLOND, furnished with two telescopes, which afforded the means of obtaining double observations of each star the same evening. This instrument stood 122 feet above the level of the sea, on a cask filled with sand, firmly frozen to the ground, and was secured from the weather by a suitable covering.

The observations by Lieutenant Ross, in Tables XIII. to XV. inclusive, were obtained with a small variation transit instrument as an upper telescope, and those in Tables XVI. and XVII. by a pocket telescope below; both being fixed to a cask filled with sand. None of the instruments used by either of the three observers were removed, till after the completion of the whole series of observations.

The hour angle by which the true altitude of the setting star was determined, was obtained by taking its right ascension from that of the meridian, at the time of observation, as found by transits of well known stars, which took place within three quarters of an hour of the other star's setting, thus rendering the observations as independent as possible of any want of uniformity in the rates of the pocket chronometers employed by the observers. The transits were taken exclusively by Lieutenant FOSTER, and comparisons with the chronometer he employed, were taken by the other observers about the time of transit, in order to deduce their horary angles, contained in the respective Tables. The position of the transit instrument was rigidly verified by the transits of high and low stars in their passages across the meridian, as well as by a constant reference to a meridian mark, and by the most minute attention to the level. The heights of the barometer, and of the thermometer, suspended with its bulb on the same level with the observers in the open air, were taken at the time of every observation. The registered height of the barometer, however, in the Tables, has been corrected for instrumental errors, and brought up to a certain temperature, which is specified at the head of each of the columns containing it.

The latitude, 73° 13′ 39″,4 N.* used in these computations, is the result of 91 sets of observations on Polaris, at different horary distances from the north and south meridians, by Captain PARRY and Lieutenant FOSTER; employing Dr. YOUNG's Table of Atmospherical Refractions, published at the end of the Nautical Almanack for each year.

As soon as the sun afforded sufficient light for obtaining the apparent altitudes of the boards from the respective telescopes, observations were commenced for that purpose. The circle used by Lieutenant FOSTER afforded the direct means of doing this, for the upper telescope, by which the zenith distance of the edge of the board at the spot where the star set, was at once obtained by observation. The angular distance between this telescope and the lower one, as seen from the board, was determined by means of a double wire micrometer, attached to one of DOLLOND's achromatic telescopes 46 inches focal length, the object-glass of which was let into the board, so as to make its centre exactly coincide with that part behind which the star set.

The telescopes employed by Captain PARRY and Lieutenant Ross, not being attached to an instrument calculated for measuring zenith distances, required some further contrivance to obtain the altitudes of the boards with respect to them. In order to place the repeating circle precisely at the same altitude with Captain PARRY's upper telescope, a levelling staff was fixed into the ground, half way between the place of observation and the board. This being adjusted by sliding up or down till a fine brass point on its upper end exactly

* The elements of this result, are given in the Appendix to Capt. PARRY's Narrative of the Third Voyage for the Discovery of a North West Passage into the Pacific Ocean.

coincided with the edge of the board, when seen through the upper telescope; the repeating circle was also raised or lowered until the same coincidence obtained, when looking through *its* telescope. The accuracy of the position thus obtained was finally verified by observing the setting of the star, through each telescope, when it was found to disappear to both observers at the same instant.

For the altitude of the board, with respect to the lower telescope used by Captain PARRY, a short staff, exactly equal in length to the measured distance between the telescopes, was fixed vertically above the board, and the zenith distance of its well defined top observed by the repeating circle in its former place. And as a confirmation of the results thus obtained, the method described above, as adopted by Lieutenat FOSTER, by means of the micrometer, was also resorted to; a mean of the two methods (which differed 2″,8), being used in the computation of the refractions. Lieutenant Ross's zenith distances were obtained by a repeating circle, placed on the same cask which held the telescopes he employed, the angular distance between each of these, and that of the circle (when directed to the board), being determined by repeated observations with the micrometer, fixed upon the respective boards in the manner already described. In some instances, Lieutenant Ross observed the re-appearence of $\alpha$ Aquilæ under the board, thus obtaining an observation at another altitude. The corresponding zenith distance of that part of the board was determined by measuring with the micrometer, the angle subtended by the board at the place of observation.

The zenith distances of the boards, as obtained by the

respective observers, are given in the Tables attached to the corresponding observations for refraction, except those of Lieutenant Ross, the details of which, were unfortunately left on board the Fury at the time of her loss.

While making the above mentioned observations for the zenith-distances of the boards, Captain PARRY had occasion to notice, on the 28th of February, some anomalies which had never before occurred, and which were at first attributed to some slight and imperceptible change in the position of the repeating circle (see Table III.) On continuing the observations, however, it soon appeared that the changes coincided nearly with particular times of the day, the greatest zenith distance always occurring when the thermometer stood the highest, and the weather was most calm. To clear the zenith distances of this effect of refraction, the repeating circle was carried up the hill, the object-glass of its telescope being placed in a notch cut in the board, as already described above in using the micrometer; when by several days' observations, continued from morning till night, it was found that the same phenomenon as before occurred, the zenith distance of the station below uniformly increasing from the morning till the afternoon, and again decreasing as the sun fell. Two sets of observations taken at the board after midnight, by means of a lamp viewed through the tube of the telescope, at the lower station, gave nearly a mean of all the other observations. Thus it appeared that whether observed from the top or the bottom of a hill whose altitude was $4^{\circ}\frac{1}{2}$, an increase of zenith distance (varying from $9''$ to $17''$), took place about the same hours, indicating a comparatively rare medium near the surface of the ground, and giving such a curvature to the visual ray, as to produce a similar effect at both stations.

# Table I.

## Observations for determining the Apparent Altitude of Arcturus at Setting, by Captain Parry, 1824-5.

The corresponding Observations for Refraction are contained in Table II.

| Day. | Time. | No. of Observations. | Mean Reading of the four Verniers. | Correction for Index. | Correction for Level. | Apparent Altitude. | Barom. Corr. to Temp. + 50° | Temp. Fah$^{t}$. | Velocity of Winds. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1825. | | | ° ′ ″ | ″ | ′ ″ | ° ′ ″ | Inches. | ° | | | |
| Mar. 23rd | 6$^{h}$ to 6$^{h}$ 40$^{m}$ A. M. | 8 | 299 45 55 | +10 | — 18,75 | 7 31 46,72 | 30,353 | —36,5 | Lt. variable | Very clear & | ⊙ not risen. |
| | 7$^{h}$ to 7$^{h}$ 40$^{m}$ A. M. | 8 | 239 31 43 | * | — 13,75 | 48,22 | ..... | —35 | Airs | Fine | ⊙ not on the instrument. |
| | 9$^{h}$ 10$^{m}$ to 10$^{h}$ A. M. | 8 | 179 17 22,5 | * | + 9,75 | 46,34 | 30,348 | —31 | Ditto | Ditto | ⊙ on the instrument. |
| | Noon to 0$^{h}$40$^{m}$P.M. | 8 | 299 47 18,75 | +13 | + 29,75 | 37,25 | 30,349 | —25<br>in ⊙—16 | Ditto | Ditto | Ditto. |
| | 1$^{h}$15$^{m}$to 2$^{h}$30$^{m}$ P.M. | 8 | 239 33 44,5 | * | +1 29 | 30,66 | ..... | —26<br>⊙—12 | Ditto | Ditto | Do. some waving at the board. |
| | 3$^{h}$ 10$^{m}$ to 4$^{h}$ P. M. | 8 | 299 46 52,5 | +10 | + 8,25 | 36,16 | 30,343 | —27 | Ditto | Ditto | Ditto Ditto |
| | 4$^{h}$40$^{m}$ to 5$^{h}$15$^{m}$P.M. | 8 | 239 34 10 | * | — 23,75 | 38,28 | 30,330 | —30 | Ditto | Ditto | Instrument partly shaded. |
| | 5$^{h}$30$^{m}$ to 6$^{h}$ 10$^{m}$P.M. | 8 | 299 46 55 | +10 | — 9,5 | 38,06 | ..... | —31 | Ditto | Ditto | Ditto quite shaded. |
| Mar. 24th | 6$^{h}$20$^{m}$to 6$^{h}$55$^{m}$ A.M. | 8 | 299 45 57,5 | +10 | + 18,25 | 41,78 | 30,355 | —37 | Light air | Clear & fine | ⊙ not risen. |
| | 1$^{h}$ 15$^{m}$ to 2$^{h}$ P. M. | 8 | 299 47 15 | +10 | + 21,5 | 31,69 | 30,386 | —28<br>⊙—15 | Easterly | Ditto | Instrument skreened from ⊙. |
| | 2$^{h}$10$^{m}$ to 2$^{h}$40$^{m}$P.M. | 8 | 239 33 54 | * | + 48,75 | 34,03 | ..... | —29<br>⊙—19½ | Ditto | Ditto | Ditto by a snow wall. |
| | 4$^{h}$30$^{m}$ to 5$^{h}$30$^{m}$P.M. | 8 | 299 47 27,5 | + 5 | — 22 | 36,19 | 30,380 | —32 | Ditto | Ditto | Ditto Ditto |
| Mar. 25th | 6$^{h}$10$^{m}$to 6$^{h}$50$^{m}$ A.M. | 8 | 299 46 37,5 | +10 | — 30,25 | 42,84 | 30,397 | —38,5 | Light airs | Fine & clear | The instrument quite shaded by a wall of snow. |
| | 1$^{h}$ to 1$^{h}$ 40$^{m}$ P. M. | 8 | 299 45 42,75 | +10 | +1 00,75 | 38,31 | 30,396 | —32 | Ditto | Ditto | |
| | 2$^{h}$ to 2$^{h}$ 40$^{m}$ P.M. | 8 | 239 32 45,75 | * | + 12,75 | 35,53 | 30,387 | —30 | Ditto | Ditto | |
| | 5$^{h}$15$^{m}$ to 6$^{h}$15$^{m}$P.M. | 8 | 179 19 02,5 | * | — 13,75 | 44,63 | 30,393 | —32 | Ditto | Ditto | Ditto. |
| Apr. 2nd | 4$^{h}$40$^{m}$to 5$^{h}$20$^{m}$ A.M. | 8 | 299 46 21,5 | + 7,5 | — 24,5 | 44,44 | 29,938 | —35 | Wind | Clear | ⊙ not risen. |
| | 1$^{h}$30$^{m}$to 2$^{h}$15$^{m}$ P. M. | 8 | 299 47 08,75 | + 7,5 | — 19,75 | 37,94 | 29,889 | —23<br>⊙—20 | Fresh and Cold | Ditto | Instrument skreened from ⊙. |
| | 2$^{h}$30$^{m}$to 3$^{h}$10$^{m}$P.M. | 8 | 239 34 27,5 | * | — 7 | 36,03 | 29,881 | —23 | Ditto | Ditto | Ditto. |
| | 6$^{h}$ 30$^{m}$ to 7$^{h}$ P. M. | 8 | 299 47 38,75 | + 7,5 | — 12 | 33,22 | 29,875 | —28 | Ditto | Ditto | ⊙ on instrument. |
| Apr. 6th. | 2$^{h}$ to 2$^{h}$ 40$^{m}$ P. M. | 8 | 299 47 37,5 | + 7,5 | — 7 | 32,75 | 30,104 | —22<br>⊙—16 | Light | Ditto | |

Mean apparent altitude 7° 31′ 38″,62 used for the refractions in Table II.

* The index not reset to 360°.

# Table II.

## Observations for the Atmospheric Refraction observed by the setting of Arcturus, 1824-5, by Captain PARRY.

Apparent Altitude 7° 31′ 38″,62.

| Day. | Time of Arcturus setting by No. 2. | Transit Observed. Star. | Transit Observed. Time reduced to No. 2. | Rate of No. 2. losing. | Arcturus's Horary ∠ at setting. | Arcturus's True altitude. | Observed Refraction. | Barom. Corr. to Temp. + 50° | Temp. Fah$^t$. | Winds. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Nov. 28th | 0 33 45,3 | α Andromeda | 1 14 48,08 | 1,0 | 9 10 32,82 | 7 23 50,3 | 7 48,32 | 29,936 | − 5 | | | |
| Dec. 1st | 0 22 01 | α Arietis | 3 00 37,54 | 1,0 | 9 10 38,21 | 7 23 34,7 | 8 03,92 | 30,083 | 20 | Easterly Fresh | Very Clear | |
| 2d | 0 26 49,5 | Ditto | 3 05 23,34 | 1,24 | 9 10 40,85 | 7 23 27,4 | 8 11,22 | 29,946 | 21 | Ditto Light | Ditto | |
| 5th | 0 14 59,7 | α Andromeda | 0 55 51,86 | 1,24 | 9 10 43,20 | 7 23 21,75 | 8 16,87 | 939 | 21 | Ditto Ditto | Ditto | |
| 6th | 0 10 59,2 | Ditto | 0 51 54,91 | 1,24 | 9 10 39,69 | 7 23 29,2 | 8 09,42 | 786 | 18,8 | Ditto Ditto | Ditto | |
| 7th | 0 07 01 | Ditto | 0 47 57,95 | 1,24 | 9 10 38,42 | 7 23 32,5 | 8 06,12 | 517 | 11 | NNE Fresh | A few fleecy clouds, star clear. | |
| 8th | 0 03 05 | Ditto | 0 44 00,85 | 1,24 | 9 10 39,53 | 7 23 29,2 | 8 09,42 | 501 | 19,5 | NE Light | Very clear | |
| 9th | 11 59 10 | Ditto | 12 40 03,36 | 1,24 | 9 10 41,85 | 7 23 22,5 | 8 16,12 | 719 | 18,5 | NNE Ditto | Ditto | |
| 10th | 11 55 04 | Ditto | 12 36 07,5 | 2,22 | 9 10 31,64 | 7 23 50,2 | 7 48,42 | 683 | 11,5 | Ditto Fresh | Rather hazy near horizon. | |
| 11th | 11 51 10 | Ditto | 12 32 08,26 | 2,22 | 9 10 36,86 | 7 23 35,8 | 8 02,82 | 610 | 15,2 | NW Fresh | Clear | |
| 13th | 11 43 18,2 | Ditto | 12 24 11,9 | 2,22 | 9 10 41,32 | 7 23 22,8 | 8 15,82 | 30,001 | 24,5 | North Moder. | Very clear | |
| 14th | 11 39 24 | Ditto | 12 20 13,9 | 2,22 | 9 10 45,09 | 7 23 08,6 | 8 30,02 | 152 | 27,2 | WNW Ditto | Ditto | |
| 15th | 11 35 30,5 | Ditto | 12 16 15,13 | 2,22 | 9 10 50,35 | 7 23 57,5 | 8 41,12 | 337 | 35 | NE Light | Ditto | [South. |
| 20th | 11 15 27 | α Arietis | 13 54 04,46 | 1,97 | 9 10 36,6 | 7 23 34,3 | 8 04,32 | 29,619 | 23,5 | North Fresh | Ditto except near horizon. | Aurora in |
| 21st | 11 11 37 | α Andromeda | 11 52 27,45 | 1,97 | 9 10 44,28 | 7 23 12,8 | 8 25,82 | 807 | 28,2 | Ditto Light | Clear | Aurora faint S W. |
| 22d | 11 07 38 | Ditto | 11 48 29,96 | 1,97 | 9 10 42,72 | 7 23 16,9 | 8 21,72 | 877 | 29 | Easterly Ditto | Ditto | Ditto Ditto |
| 23d | 11 03 47 | Ditto | 11 44 33,96 | 1,97 | 9 10 47,68 | 7 23 03 | 8 35,62 | 801 | 31 | Calm | Ditto | Star not very distinct. |
| 26th | 10 51 48,5 | Ditto | 11 32 43,13 | 0,73 | 9 10 39,91 | 7 23 23,6 | 8 15,02 | 989 | 27,8 | ENE moderate | Ditto | Aurora faint SS.W. |
| 29th | 10 39 56 | Ditto | 11 20 52,75 | 0,73 | 9 10 37,71 | 7 23 21,6 | 8 17,02 | 637 | 16,5 | East Light | Very Clear | |
| 1825. | | | | | | | | | | | | |
| Jan. 2d | 10 23 59 | Ditto | 11 04 51,95 | 3,25 | 9 10 41,17 | 7 23 18,5 | 8 20,12 | 881 | 29,4 | Ditto Ditto | Clear | |
| 3d | 10 20 03 | α Arietis | 12 58 34,5 | 3,25 | 9 10 41,88 | 7 23 15,5 | 8 23,12 | 835 | 31,7 | Ditto Ditto | A few thin clouds. | Star quite clear. |
| 4th | 10 15 59 | α Andromeda | 10 56 56,62 | 3,25 | 9 10 36,39 | 7 23 30,25 | 8 08,37 | 487 | 27 | ENE Squally | Some haze | Star distinct. |
| 5th | 10 12 05,5 | Ditto | 10 52 59,63 | 3,25 | 9 10 39,86 | 7 23 20,6 | 8 18,02 | 338 | 36,5 | Easterly Light | Ditto | Indifferent observation. |
| 6th | 10 08 13 | Ditto | 10 49 01,7 | 3,25 | 9 10 45,88 | 7 23 03,6 | 8 35,02 | 269 | 32,2 | Northerly D°. | Tolerably Clear | Star distinct. |
| 7th | 10 04 12,5 | Ditto | 10 45 04,1 | 2,11 | 9 10 42,33 | 7 23 13,4 | 8 24,22 | 529 | 35,5 | Easterly Ditto | Quite Clear | |
| 10th | 9 52 20 | Ditto | 10 33 10,43 | 2,11 | 9 10 43,48 | 7 23 46,7 | 8 51,92 | 962 | 35,5 | Ditto Ditto | Very Clear | |
| 11th | 9 48 26 | Ditto | 10 29 13,25 | 2,11 | 9 10 46,53 | 7 23 00,7 | 8 37,92 | 30,140 | 38,3 | Ditto Ditto | Ditto | |
| 12th | 9 44 26,5 | Ditto | 10 25 14,23 | 2,11 | 9 10 46 | 7 23 02 | 8 36,62 | 29,954 | 38,4 | ENE Ditto | Ditto | |
| 15th | 9 32 32 | Ditto | 10 13 20,85 | 2,5 | 9 10 44,75 | 7 23 05,2 | 8 33,42 | 711 | 27,5 | Easterly Ditto | Ditto | |
| 16th | 9 28 29,5 | Ditto | 10 09 20,78 | 2,5 | 9 10 42,27 | 7 23 11,7 | 8 26,92 | 730 | 31,2 | Ditto Ditto | Ditto | Some twilight westward. |
| 17th | 9 24 30,6 | Ditto | 10 05 19,71 | 2,5 | 9 10 44,39 | 7 23 05,8 | 8 32,82 | 638 | 28 | Ditto Mod. | Rather hazy | Star distinct, good obser$^n$. |
| 24th | 8 13 12 | Ditto | 8 53 54,56 | 6,02 | 9 10 50,55 | 7 23 47,4 | 8 51,22 | 822 | 37,2 | NEasty. Light | Tolerably Clear | Star quite distinct. |
| 25th | 8 09 06 | α Pegasi | 7 46 45,57 | 6,02 | 9 10 45,24 | 7 23 01,8 | 8 36,82 | 795 | 42,2 | Ditto Ditto | Very Clear | Strong twilight westward. |
| 27th | 8 00 55,5 | Ditto | 7 38 42,5 | 6,02 | 9 10 37,74 | 7 23 20,1 | 8 18,52 | 846 | 27 | NW Fresh | Clear and Drift | Star quite clear. |
| | | | | | | Means | 8 23,95 | 29,791 | − 23,58 | | | |

## Table III.

**Observations for determining the apparent altitude of *a* Aquilæ at setting, by Captain PARRY's *upper* telescope. The corresponding observations for refraction are contained in Table IV.**

| Day. | Time. | No. of Observations. | Mean Reading of the four Verniers. | Correction for Index. | Correction for Level. | Apparent Altitude. | Barom. Corr. to Temp. + 50°. | Temp. in Shade Faht. | Winds True. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1825. | h m | | ° ′ ″ | ″ | ″ | ° ′ ″ | Inches. | ° | | | |
| Feb. 2d | 10 30 A. M. to 2 P. M. | 8 | 323 40 12,5 | +10 | — 2,25 | 4 32 27,47 | 30,04 | —39,5 | Easterly very light | Very clear | The sun did not rise upon the board till the 12th, nor on the place of observation till the 14th. |
| | | 8 | 323 41 10 | +10 | —34,5 | 24,31 | .... | —40,5 | | Hazy | |
| 5th | 11 to Noon. | 8 | 323 41 07,5 | +10 | —40,5 | 25,37 | 29,05 | —26 | NNE Fresh | Clear & fine | |
| 11th | 1 to 2 P. M. | 8 | 323 40 15 | + 7,5 | +21,5 | 24,53 | 30,15 | —31,5 | Easterly Light | | |
| 15th | Noon to 1 P. M. | 8 | 323 40 30 | +11,25 | — 8 | 25,84 | 29,65 | —31,5 | NortherlyLight | Hazy | |
| 28th | 10 30 to 11 30 A. M. | 8 | 323 37 53,25 | + 7,5 | +40,5 | 39,84 | 29,90 | —18 | Easterly very light | Clear and warm | |
| | 0 to 0 40 P. M. | 8 | 287 18 17,5 | * | −1′08,25 | 35,5 | .... | —19 | | | |
| | 0 45 to 1 30 P. M. | 8 | 250 56 35,75 | * | +24,75 | 39,62 | .... | —19 | | | |
| | 1 25 to 2 15 P. M. | 8 | 214 36 37,5 | * | — 8 | 30,78 | .... | —18,5 | | | |
| | about sunset. | 8 | 178 16 32,5 | * | —11,75 | 32,04 | 29,93 | —19 | | | |
| | Mean of observations at lower station | | | | | 4 32 30,53 | | | | | |
| | All the following observations were made at the upper station. | | | | | | | | | | |
| Mar 7th | h m 10 30 A. M. to 0 40 P. M. | 20 | 90 54 40 | +10 | +10,25 | 4 32 45,01 | 30,19 | —35 | Varia. & Light | Clear | Sun bright and very warm. |
| 8th | 10 A. M. to Noon. | 20 | 90 51 57,5 | 0 | −1′47,75 | 30,49 | 29,98 | —27 | Easterly Light | Cloudy | |
| | 0 to 2 P. M. | 20 | 181 46 12,5 | * | −1′26,25 | 38,44 | .... | —27 | ..... | ⊙breaking through the clouds. | |
| | 2 to 4 30 P. M. | 20 | 272 36 48,75 | * | —50,75 | 29,27 | 30,00 | —28,5 | ..... | ⊙ obscured | |
| 10th | 11 A. M. to 0 30 P. M. | 10 | 225 24 34,25 | +10 | +27,25 | 31,13 | 30,26 | —28 | Nearly calm weather | Very clear | |
| | 0 46 to 1 50 P. M. | 10 | 90 50 13,75 | * | +1′20 | 41,95 | .... | —29 | | Ditto | |
| | 2 to 2 55 P. M. | 10 | 316 14 29,25 | * | +1′16,25 | 33,17 | 30,28 | —29 | | Clear | |
| | 3 10 to 4 15 P. M. | 10 | 181 40 17,5 | * | —32 | 31,62 | .... | —30 | Ditto | Ditto | |
| | 4 15 to 5 40 P. M. | 6 | 28 54 32,5 | * | +29 | 27,33 | 30,30 | —30,5 | Ditto | Ditto | |
| 11th | 6 30 to 7 40 A. M. | 10 | 225 23 17,5 | + 6,2 | +18,25 | 22,19 | 30,37 | —37 | Fine and nearly calm throughout the day | | |
| | 7 50 to 8 40 A. M. | 8 | 261 43 03,75 | * | + 9 | 29,41 | 30,38 | —35 | | | |
| | 9 45 to 10 40 A.M. | 10 | 225 23 42,5 | +10 | +31 | 26,35 | .... | —34 | | | |
| | Noon to 1 P. M. | 10 | ‡67 39 58,75 | * | +22,25 | 31,35 | 30,39 | —29 | | | |
| | 1 25 to 2 30 P. M. | 10 | 293 05 15 | * | +26,25 | 34,25 | 30,34 | —28 | | | |
| | 3 10 to 4 P. M. | 8 | 36 20 58,75 | +12,5 | —30,25 | 35,13 | .... | —29 | | | |
| | 4 50 to 5 30 P. M. | 10 | †64 26 32,5 | * | —35,25 | 26,22 | 30,35 | —33 | | | |
| 12th | 6 30 to 7 30 A. M. | 10 | 225 24 38,75 | + 7,5 | —25,75 | 26,05 | 30,20 | —35,5 | Ditto | Ditto | Western land much refracted. |
| | 11 45 to 0 35 P. M. | 10 | 225 25 30 | + 6,5 | +28,25 | 36,47 | 30,12 | —27 | | | |
| | 2 50 to 3 30 P. M. | 10 | ††67 44 05 | * | +59,5 | 39,20 | 30,05 | —27,5 | | | |
| | 4 10 to 4 50 P. M. | 10 | ‡‡95 51 17,5 | * | —55 | 33,75 | 30,02 | —31 | | | |
| 14th | 6 15 to 7 15 A. M. | 8 | 36 19 50 | + 6,2 | —71,5 | 20,59 | 29,79 | —35 | ..... | ..... | ⊙ rose towards the conclusion. |
| | 1 30 to 2 30 P. M. | 10 | 202 19 05,5 | ** | + 7 | 37,80 | 75 | —26,5 | Ditto | Ditto | |
| | 4 20 to 5 40 P. M. | 12 | 54 29 51,25 | + 7,5 | —45,5 | 26,10 | 76 | —30 | | | |
| 21st | 10 40 to 11 50 P. M. | 8 | 36 21 17,5 | +10 | —58,75 | 33,59 | 29,90 | —33 | Calm | Very clear | |
| 22d | 0 till 1 A. M. | 8 | 72 42 12,5 | * | — 3,25 | 36,47 | .... | —35 | | | |
| | Mean of 2 sets taken at night at the upper station | | | | | 4 32 35,03 | | | | | |

* Index not reset to 360° after the last observation.
‡ Index not reset after an observation for another object. Index error 202° 15′ 07″,5.
† Ditto - - - - - - - - 199 01 35.
†† Ditto - - - - - - - - - 202 18 32,5.
‡‡ Ditto - - - - - - - - - 230 24 45.
** Ditto - - - - - - - 336 52 54,5.

| | Altitude. |
|---|---|
| | ° ′ ″ |
| Mean of 80 zenith distances taken at the lower station | 4 32 30,35 |
| Mean of 278 at the upper station - - | 4 32 32,13 |
| Mean of both stations by day - - | 4 32 31,67 |
| Mean of 16 zenith distances taken at night - | 4 32 35,03 |
| Mean of all the above - | 4 32 32,34 used in computing the refractions in Table IV. |

# Table IV.

## Observations for the Atmospheric Refraction observed by the setting of α Aquilæ 1824-5, by Captain Parry.

Apparent Altitude 4° 32′ 32″,34.

| Day. | Time of α Aquilæ setting by No. 2. | Transit Observed. Star. | Transit Observed. Time reduced to No. 2. | Rate of No. 2. Losing. | α Aquilæ. ∠ Horary at setting. | α Aquilæ. True Altitude. | Observed Refraction. | Barom. Corr. to Temp. +50°. | Temp. Fah$^{t}$. | Winds True. | Weather. | Remarks, &c. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Dec. 8th | 3 18 48,5 | α Arietis | 2 41 40,38 | 1,24 | 6 52 21,35 | 4 19 44,8 | 12 47,54 | 29,544 | −18 | NNE Fresh | Very Clear | |
| 10th | 3 10 48 | αAndromedæ | 0 36 07,55 | 2,22 | 6 52 14,45 | 20 10,8 | 12 21,54 | 564 | 14 | Northerly Light | Ditto | |
| 11th | 3 06 51 | α Arietis | 2 29 48,2 | 2,22 | 6 52 16,05 | 20 05,5 | 12 26,84 | 707 | 14 | NNW Fresh | Clear | |
| 13th | 2 59 06,5 | Ditto | 2 21 51,23 | 2,22 | 6 52 28,54 | 19 13 | 13 19,34 | 30,056 | 25 | North Light | Very Clear | |
| 16th | 2 49 14,5 | Aldebaran | 4 38 06,79 | 2,22 | 6 52 30,65 | 19 03,8 | 13 28,54 | 098 | 35 | ENE Ditto | Ditto | Aurora faint SW. |
| 20th | 2 31 17 | α Arietis | 1 54 03,56 | 1,97 | 6 52 26,65 | 19 19,8 | 13 12,54 | 29,674 | 26,3 | North Ditto | Ditto | Ditto. [ward. |
| 21st | 2 27 20 | Ditto | 1 50 06,77 | 1,97 | 6 52 26,44 | 19 20,8 | 13 11,54 | 800 | 26,8 | Ditto Fresh | Clear | Do. bright to the south- |
| 22d | 2 23 23 | Ditto | 1 46 09,38 | 1,97 | 6 52 26,81 | 19 19,2 | 13 13,14 | 837 | 27,2 | SW Light | Ditto | Do. faint in SW. |
| 23d | 2 19 26 | Ditto | 1 42 13,26 | 1,97 | 6 52 25,93 | 19 22,3 | 13 10,04 | 810 | 32 | Calm | Very Clear | Ditto Ditto. |
| 26th | 2 07 30 | Ditto | 1 30 21,96 | 0,73 | 6 52 21,15 | 19 42,2 | 12 50,14 | 987 | 26,5 | ..... | A little haze near horizon, | |
| 29th | 1 55 35 | Ditto | 1 18 31,43 | 0,73 | 6 52 16,66 | 20 00,7 | 12 31,64 | 666 | 16 | Easterly Light | Ditto | Star quite distinct. |
| 1825. | | | | | | | | | | | | |
| Jan. 2d | 1 39 42 | Ditto | 1 02 32,13 | 3,25 | 6 52 22,93 | 19 32,3 | 13 00,04 | 847 | 30 | Ditto Ditto | A few thin clouds | Ditto |
| 3d | 1 35 49 | Ditto | 0 58 33,8 | 3,25 | 6 52 28,24 | 19 10,3 | 13 21,73 | 828 | 33 | Ditto Ditto | Ditto | Ditto |
| 5th | 1 27 49,3 | Ditto | 0 50 38,56 | 3,25 | 6 52 23,55 | 19 29,8 | 13 02,54 | 356 | 35,5 | Ditto Ditto | A little haze | Ditto |
| 6th | 1 23 49 | Ditto | 0 46 40,86 | 3,25 | 6 52 20,91 | 19 44,4 | 12 47,94 | 322 | 32,2 | NE Ditto | Ditto Eastward | Ditto |
| 10th | 1 08 06,2 | Ditto | 0 30 50,28 | 2,11 | 6 52 28,60 | 19 07,5 | 13 24,84 | 30,054 | 35,5 | Easterly Ditto | Very Clear | |
| 11th | 1 04 12,2 | Ditto | 0 26 51,01 | 2,11 | 6 52 33,89 | 18 45 | 13 47,34 | 127 | 39,3 | Ditto Ditto | Ditto | |
| 12th | 1 00 09 | Ditto | 0 22 52,86 | 2,11 | 6 52 28 | 19 06,3 | 13 26,04 | 29,983 | 38,7 | Ditto Ditto | Ditto | |
| 17th | 0 40 17 | Ditto | 0 02 59,46 | 2,5 | 6 52 30,09 | 19 00,2 | 13 32,14 | 623 | 26,5 | Ditto Fresh | Clear over head | Drift below, star distinct. |
| 20th | 12 28 05,5 | Ditto | 11 50 56,47 | 2,3 | 6 52 21,70 | 19 35 | 12 57,34 | 372 | 29 | Northerly Light | Very Clear | Aurora faint to south- |
| 25th | 11 24 49,5 | Ditto | 10 47 33,32 | 6,02 | 6 52 28,81 | 19 04,5 | 13 27,84 | 787 | 43,2 | Easterly Ditto | A few Clouds | Star very distinct. [ward. |
| 27th | 11 16 45,5 | Ditto | 10 39 30,03 | 6,02 | 6 52 28,05 | 19 06,7 | 13 25,64 | 833 | 28,2 | NW Fresh | Very Clear | |
| Feb. 2d | 10 50 34,5 | Ditto | 10 13 14,08 | 5,91 | 6 52 32,94 | 18 46 | 13 46,34 | 224 | 41,2 | Easterly Mod. | Ditto | |
| 7th | 10 30 10 | Ditto | 9 53 03,44 | 5,7 | 6 52 18,59 | 19 45,5 | 12 46,84 | 583 | 26,5 | Calm | Ditto | Twilight westward. |
| 8th | 10 26 24 | αAndromedæ | 7 51 21,35 | 5,7 | 6 52 35,89 | 18 32,8 | 13 59,54 | 749 | 37 | Ditto | Ditto | Good Ditto Ditto |
| 9th | 10 22 17,8 | α Arietis | 9 45 00,75 | 5,7 | 6 52 28,77 | 19 02,5 | 13 29,84 | 960 | 37,7 | Easterly Light | Ditto | Ditto Ditto |
| 11th | 10 14 16,7 | αAndromedæ | 7 39 19,13 | 5,7 | 6 52 30,71 | 18 54,3 | 13 38,04 | 30,154 | 34 | | | |
| | | | | | | Means | 13 12,51 | 29,761 | −29,94 | | | |

## Table V.

**Observations for determining the Apparent Altitude of α Aquilæ at setting, by Captain PARRY's *lower* telescope.**

The corresponding observations for Refractions are contained in Table VI.

| Day. | Time. | No. of Observations. | Mean Reading of the 4 Verniers. | Correction for Index. | Correction for Level. | Apparent Altitude. | Barom. Corr. to Temp. + 50°. | Tem. Fah$^t$. | Winds True. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. h. | | ° ′ ″ | ″ | ″ | ° ′ ″ | Inches. | ° | | | |
| Feb. 16th | 1 to 2 P.M. | 8 | 322 48 33,75 | +10 | −10,25 | 4 38 55,81 | 29,831 | −36 | Easterly | Fine | ⊙ had been on the board |
| | 2 to 3 P.M. | 8 | 285 37 12,5 | * | −16,25 | 57,19 | 29,831 | −34½ | Easterly | | just before the observation. |
| 18th | 8 to 9 A.M. | 8 | 322 48 00 | + 2,5 | + 29,25 | 56,03 | 29,608 | −29 | Easterly | Clear | ⊙ not up. |
| | 2½ to 4 P.M. | 8 | 285 35 12,5 | * | +1′24,25 | 55,41 | 29,645 | −26½ | Easterly | Ditto | ⊙ had set. |
| 22d | 8 to 9 A.M. | 8 | 322 48 12,5 | +10 | −12,25 | 58,72 | 29,791 | −30 | ESE | Ditto | ⊙ not on the board. |
| | | | Mean altitude by repeating circle .... | | | 4 38 56,63 | | | | | |
| | | | Ditto for upper telescope.... | | | 4 32 32,34 | See Tab. III. | | | | |
| | Difference of the two telescopes by zenith distances | | | | | 6′ 24″,29 | | | | | |

Observations by the micrometer, to obtain the angular distance between the two telescopes used for observing the setting of α Aquilæ. The telescope placed on the board as before described.

March 12th, 1825.

From $10^h\ 30^m$ to $11^h\ 30^m$ A. M.

| Upper wire fixed. | Lower wire moved. |
|---|---|
| 61,2 | 45,8 |
| 58,8 | 50,6 |
| 59,2 | 53 |
| 60,2 | 46,3 |
| 60,9 | 48,8 |
| 62,3 | 51 |
| 60 | 49 |
| 62 | 49,4 |
| 61 | 49,3 |
| 63 | 49,3 |
| 60,86 | 49,25 |
| 49,25 | |
| 11,61 | |

From Noon till $1^h\ 0^m$ P. M.

| Upper wire fixed. | Lower wire moved. |
|---|---|
| 32 | 43 |
| 32,5 | 44 |
| 31,5 | 43,2 |
| 33,2 | 43,8 |
| 32,3 | 48 |
| 33,8 | 43 |
| 32,8 | 43,8 |
| 36,8 | 45 |
| 36,2 | 47 |
| 37 | 47,5 |
| 33,81 | 44,83 |
| | 33,81 |
| | 11,02 |

+ 8 turns of the screw = 811,61 divisions.

811,02 = + 8 turns

Mean 811,31 × 47′ 7″ (the value of each division) = 6′ 27″,09.

Difference of altitude between the two telescopes by the repeating circle.....6′ 24″,29

by the micrometer.....6 27 ,09

Mean .....6 25 ,69

Altitude observed for the upper telescope (Table III.)..... 4 32 32 ,34

Altitude for lower telescope, used for the refractions, in Table VI..... 4 38 58 ,03

# Table VI.

## Observations for the Atmospheric Refraction, observed by the setting of α Aquilæ, 1824-5, by Captain PARRY.

Apparent Altitude 4° 38′ 58″,03.

| Day. | Time of α Aquilæ setting by No. 2. | Transit observed. Stars. | Transit observed. Time reduced to No. 2. | Rate of No. 2 losing. | α Aquilæ. Hor. ∠ at setting. | α Aquilæ. True altitude. | Observed Refraction. | Barom. Corr. to Temp. + 50°. | Temp. Fahr. | Winds True. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Dec. 20th | 2 29 43,5 | α Arietis | 1 54 03,56 | 1,97 | 6 50 52,89 | 4 25 52,3 | 13 05,73 | 29,674 | —26,3 | North Light | Very clear | Aurora faint. |
| 21st | 2 25 46 | Ditto | 1 50 06,77 | 1,97 | 6 50 52,17 | 25 55,4 | 13 02.63 | 800 | 26,8 | Do. Fresh | Do. | Do. bright to southward. |
| 22d | 2 21 47 | Ditto | 1 46 09,38 | 1,97 | 6 50 50,54 | 26 01,8 | 12 56,23 | 837 | 27,2 | SW Light | Do. | Do. faint in SW. |
| 23d | 2 17 50,5 | Ditto | 1 42 13,26 | 1,97 | 6 50 50,16 | 26 04,4 | 12 53,63 | 810 | 32 | Calm | Do. | Do. Do. |
| 26th | 2 05 55,5 | Ditto | 1 30 21,96 | 0,73 | 6 50 46,39 | 26 19 | 12 39,03 | 987 | 26,5 | ..... | Clear, except near the horizon. | |
| 29th | 1 54 00 | Ditto | 1 18 31,43 | 0,73 | 6 50 41,39 | 26 39,4 | 12 18,63 | 666 | 16 | Easterly Light | Do. a thin haze near horizon. | |
| 1825 | | | | | | | | | | | | |
| Jan. 2d | 1 38 08 | Ditto | 1 02 32,13 | 3,25 | 6 50 48,66 | 26 07 | 12 51,03 | 847 | 30 | Do. Do. | Do. | Moonlight. |
| 3d | 1 34 11 | Ditto | 0 58 33, 8 | 3,25 | 6 50 49,94 | 26 01,5 | 12 56,53 | 828 | 33 | D . Do. | Do. a few thin clouds; star distinct. | |
| 5th | 1 26 16,3 | Ditto | 0 50 38,56 | 3,25 | 6 50 50,19 | 26 00,3 | 12 57,73 | 356 | 35,5 | Do. Do. | Do. a little haze | Do. |
| 6th | 1 22 17 | Ditto | 0 46 40,86 | 3,25 | 6 50 48,66 | 26 06,4 | 12 51,63 | 322 | 32,2 | NE Do. | Do. Do. | Do. |
| 10th | 1 06 33 | Ditto | 0 30 50,28 | 2,11 | 6 50 55,15 | 25 38,6 | 13 19,43 | 30,054 | 35,5 | Easterly Do. | Very clear | |
| 11th | 1 02 36,5 | Ditto | 0 26 51,01 | 2,11 | 6 50 57,93 | 25 33,3 | 13 24,73 | 127 | 39,3 | Do. Do. | Do. | |
| 12th | 0 58 37 | Ditto | 0 22 52,86 | 2,11 | 6 50 56,55 | 25 36 | 13 22,03 | 29,983 | 38,7 | Do. Do. | Do. | [star not very clear. |
| 15th | 0 46 38 | Ditto | 0 11 00,16 | 2,5 | 6 50 50,18 | 25 58,4 | 12 59,63 | 735 | 28 | Do. Do. | Do. | Aurora to the southward at times, |
| 16th | 0 42 38 | Ditto | 0 06 59,86 | 2,5 | 6 50 50,42 | 25 57,7 | 13 00,33 | 758 | 32,8 | Do. Do. | Do. | Aurora faint to southward. |
| 17th | 0 38 39 | Ditto | 0 02 59,46 | 2 5 | 6 50 51,82 | 25 51,9 | 13 06,13 | 623 | 26,5 | Do. Fresh | Clear | Some drift. |
| 20th | 12 26 29,5 | Ditto | 11 50 56,47 | 4 | 6 50 44,44 | 26 22,9 | 12 35,13 | 372 | 29 | North Light | Do. | Aurora faint to southward. |
| 25th | 11 23 14,5 | Ditto | 10 47 33,32 | 6,02 | 6 50 53,54 | 25 43,6 | 13 14,43 | 787 | 43,2 | Easterly Do. | Do. | |
| 27th | 11 15 11 | Ditto | 10 39 30.03 | 6,02 | 6 50 52,99 | 25 45,3 | 13 12,73 | 833 | 28,2 | NW Fresh | Do. | |
| Feb. 2d | 10 48 58.2 | Ditto | 10 13 14,08 | 5,91 | 6 50 56,38 | 25 32,3 | 13 25,73 | 30,224 | 41,2 | Easterly mod. | Very clear | |
| 7th | 10 28 33,5 | Ditto | 9 53 03,44 | 5,7 | 6 50 41,92 | 26 30,3 | 13 27,73 | 29,583 | 26,5 | Calm | Do. | Some twilight. |
| 8th | 10 24 44.6 | α Andromed. | 7 51 21,35 | 5,7 | 6 50 56,21 | 25 32,2 | 13 25,83 | 749 | 37 | Do. | Do. | Good Do. |
| 9th | 10 20 42 | α Arietis | 9 45 00,75 | 5,7 | 6 50 52,71 | 25 46,8 | 13 11,23 | 960 | 37,7 | Easterly Light | Do. | Do. Do. |
| 11th | 10 12 44,2 | α Androm preceding day | 7 39 19,13 | 5,7 | 6 50 57,94 | 25 22,6 | 13 35,43 | 30,154 | 34 | Do. Do. | Do. | Do. Do. |
| | | | | | | Means | 13 4,72 | 29,795 | —31,8 | | | |

## Table VII.

### Observations for determining the apparent Altitude of Arcturus at the time of setting, by Lieutenant Foster's *upper* telescope.

The corresponding Observations for Refraction are contained in Tables VIII. and IX.

| 1825. Day. | Time. | No. of Obs. | Mean Reading of the four Verniers. | Correction for Index. | Correction for Level. | Apparent Altitude. | Barom. at Temp. + 48°. | Tem. Fah$^{t}$. | Winds. True. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | h. | | ° ′ ″ | ″ | ″ | ° ′ ″ | Inches. | ° | | | |
| Feb. 18th | At 10 A.M. | 16 | 238 34 17,5 | +10,0 | +17,75 | 7 35 19,67 | 29,540 | —26 | ESE Lt. | Fine & clear | |
| —*19th | 11 A.M. | 12 | 147 31 2,5 | — | + 6,75 | 7 35 15,69 | 29,610 | —29 | Easterly | Hazy, with slight snow | |
| — 20th | 10 A.M. | 12 | 56 28 2,5 | — | + 4,5 | 7 35 14,63 | 29,626 | —35 | Calm | Clear & fine | Thin haze |
| — 21st | 9 A.M. | 6 | 190 55 57,5 | — | + 5,0 | 7 35 20,00 | ..... | —40 | Calm | Fine weather | near the hor$^{n}$. |
| | to | 6 | 325 23 57,5 | — | + 1,0 | 7 35 18,83 | 29,460 | — | ..... | ..... | Hazy near the |
| | 1½ P.M. | 6 | 99 52 6,25 | — | + 0,25 | 7 35 18,50 | ..... | —36 | | | horizon. |
| Mar. 4th | 10 A.M. | 16 | 238 34 10,25 | 0,0 | +14,50 | 7 35 20,95 | 29,600 | —31 | Calm | Clear & fine | |

Mean 7° 35′ 18,32 being the altitude used in Table VIII.

† Micrometrical measure of ∠ between tel. +1 49,82

Apparent altitude of Arcturus at setting by the *lower* tel. 7 37 8,14 being the altitude used in Table IX.

* N.B. The Index was never reset to zero after the observations of the 18th; but the instrument was carefully secured from the weather, without disturbing the verniers, and the succeeding days observations commenced at that part of the arc where the preceding ones left off. The reading, however, of all the verniers was always taken before the commencement of a fresh series of zenith distances; and as no difference in the results of the two days' readings was found, this notice will suffice for all the following observations on the altitude of this board, except that on March 4th, when the principal vernier was set to zero.

† N.B. This measurement between the upper and lower telescopes was obtained after the manner already described, by means of a double wire micrometer attached to one of Dollond's achromatic telescopes of 46 inches focal length, and 3¾ inches aperture. The number and parts of a revolution being in this case $2^{rev.}\ 30^{div.},8$. The value of a revolution, as determined from a series of observations on stars, is 47″,7, from which we deduce 1′ 50″,09 for the angle subtended at the board between the upper and the lower telescopes. But the focal length of the telescope in this measurement being 46,11 in consequence of the distance, instead of 46 inches; the angle thus measured must be reduced in the ratio of these two focal lengths in order to obtain 1′ 49″,82, the correct angular distance between the telescopes.

## Observations for the Atmospheric Refraction observed by the setting of Arcturus, 1824 and 1825. Apparent Altitude 7° 35′ 18″43. By Lieutenant Foster.

| Day. | Time of Arcturus setting by No. 423. | Transit observed. Star. | Transit observed. Time by 423. | Rate of 423. | Arcturus. Horary ∠ at setting. | Arcturus. True altitude. | Observed Refraction. | Barom$^{r}$. at Temp$^{p}$. +48°. | Temp. Fah$^{t}$. | Winds (true). | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Nov. 28th | 12 54 38 | α Andromeda | 13 36 52,58 | + 2,8 | 9 9 20,93 | 7 27 09,62 | 8 8,81 | 29,936 | — 5 | | | |
| Dec. 1st | 12 43 02 | α Arietis | 15 22 52,54 | + 1,72 | 9 9 24,33 | 7 26 59,34 | 8 19,09 | 30,083 | —20 | Easterly Fresh | Fine & clear | |
| 2d | 12 39 7,5 | Ditto | 15 18 58,34 | + 2,83 | 9 9 24,12 | 7 26 58,21 | 8 20,22 | 29,946 | —21 | ..... Light | Hazy | |
| 4th | 12 31 20 | Ditto | 15 11 15,53 | + 4,0 | 9 9 19,50 | 7 27 11,94 | 8 6,49 | 29,625 | —21,8 | North ..... | Hazy near the horizon ; clear over head. | |
| 5th | 12 27 41 | α Andromeda | 13 9 43,56 | + 3,94 | 9 9 32,76 | 7 26 34,84 | 8 43,59 | 29,949 | —21 | Easterly .... | Very clear | |
| 6th | 12 23 44 | Ditto | 13 5 50,51 | + 3,9 | 9 9 28,77 | 7 26 45,65 | 8 32,78 | 29,775 | —18,8 | ..... | Sky clear; star twinkled much some time before setting. | |
| 7th | 12 19 45 | Ditto | 13 1 58,45 | + 3,9 | 9 9 21,77 | 7 27 04,89 | 8 13,54 | 29,522 | —11 | NNE Fresh | A few fleecy clouds ; star clear, did not twinkle this evening. | |
| 8th | 12 15 55 | Ditto | 12 58 06,65 | + 3,6 | 9 9 23,53 | 7 26 59,68 | 8 18,75 | 29,501 | —19,5 | NE Light | Sky clear and fine. | |
| 9th | 12 12 06 | Ditto | 12 54 14,86 | + 4,23 | 9 9 26,31 | 7 26 51,70 | 8 26,73 | 29,725 | —18,5 | Calm still | Clear even$^{g}$ | |
| 13th | 12 10 50,50 | Ditto | 12 52 54,70 | + 4,0 | 9 9 30,92 | 7 26 37,90 | 8 40,53 | 30,001 | —24,5 | North moder. | Sky clear | |
| | Time by 649. | | Time by 649. | Rate, 649. | | | | | | | | |
| 14th | 12 6 58 | Ditto | 12 49 04,7 | + 6,4 | 9 9 28,35 | 7 26 44,78 | 8 33,65 | 30,152 | —27,2 | WNW ..... | | |
| 15th | 12 3 10,5 | Ditto | 12 45 13,63 | + 5,4 | 9 9 31,84 | 7 26 34,51 | 8 43,92 | 30,336 | —35 | NE Light | | |
| 21st | 11 40 05 | Ditto | 12 22 08,75 | + 6,2 | 9 9 31,01 | 7 26 35,60 | 8 42,83 | 29,806 | —28,2 | North ..... | ..... | Star bright at setting; Aurora faint S. W. |
| 22d | 11 36 12,2 | Ditto | 12 18 16,96 | + 4,4 | 9 9 29,90 | 7 26 38,44 | 8 39,99 | 29,877 | —29 | East ..... | Fine & clear | Aurora faint in the S. W. |
| 23d | 11 32 21 | Ditto | 12 14 25,46 | + 4,2 | 9 9 30,15 | 7 26 37,47 | 8 40,96 | 29,802 | —31 | NE ..... | Sky clear | Aurora faint in the S. W. |
| 25th | 11 24 33,5 | Ditto | 12 6 40,75 | 0,0 | 9 9 27,13 | 7 26 45,36 | 8 32,07 | 29,886 | —25,2 | Calm | Clear | Aurora faint in the SE. by S. |
| 26th | 11 20 41,5 | Ditto | 12 2 50,33 | + 5,2 | 9 9 25,68 | 7 26 49,10 | 8 29,33 | 29,985 | —27,8 | ENE moderate | Sky clear | Star twinkled a little before setting; |
| 28th | 11 12 52 | Ditto | 11 55 7,36 | + 1,3 | 9 9 18,92 | 7 27 7,45 | 8 10,58 | 29,517 | —12,5 | East Fresh | | [Aurora faint SSW. |
| 29th | 11 9 3,50 | Ditto | 11 51 15,45 | + 2,8 | 9 9 22,34 | 7 26 57,60 | 8 20,83 | 29,638 | —16,5 | ..... Light | Fine & clear | Star quite bright at the time of observation. |
| 1825. | | | | | | | | | | | | |
| Jan. 2d | 10 53 44 | Ditto | 11 35 51,95 | + 5,0 | 9 9 26,20 | 7 26 45,18 | 8 33,25 | 29,881 | —29,4 | ..... | Clear to the westward, hazy in the eastern quar$^{r}$. | |
| 3d | 10 49 51,50 | α Arietis | 13 29 41,00 | 0,0 | 9 9 23,68 | 7 26 52,06 | 8 26,37 | 29,835 | —31,5 | ..... | Sky clear, with long streaming white clouds | |
| 4th | 10 46 00,80 | α Andromeda | 11 28 9,42 | + 3,8 | 9 9 25,4 | 7 26 37,37 | 8 41,06 | 29,486 | —27,2 | ENE Fresh | Sky hazy. A halo round the moon, diameter measuring 23°29′. | |
| 5th | 10 42 15,50 | Ditto | 11 24 17,63 | + 4,3 | 9 9 31,88 | 7 26 28,74 | 8 49,69 | 29,336 | —36,5 | Easterly Light | Clear over head and to the westw$^{d}$ ; thin slight haze to the | |
| 7th | 10 34 26,00 | Ditto | 11 16 34,10 | + 4,0 | 9 9 25,80 | 7 26 45,15 | 8 33,28 | 29,509 | —35,5 | Calm still | Clear even$^{g}$ | [eastward. |
| 10th | 10 22 59,50 | Ditto | 11 5 2,93 | + 5,6 | 9 9 30,39 | 7 26 31,73 | 8 46,70 | 29,961 | —35,5 | Easterly Light | Sky clear | |
| 11th | 10 19 10,00 | Ditto | 11 1 11,25 | + 4,0 | 9 9 32,56 | 7 26 25,33 | 8 53,10 | 30,140 | —38,3 | ..... | ..... | Aurora faint to the SSW. |
| 12th | 10 15 20,50 | Ditto | 10 57 20,23 | + 4,9 | 9 9 34,29 | 7 26 20,50 | 8 57,93 | 29,953 | —38,5 | ..... | ..... | |
| 15th | 10 03 43,50 | Ditto | 10 45 45,85 | + 4,5 | 9 9 31,21 | 7 26 28,53 | 8 49,90 | 29,711 | —27,5 | ..... | ..... | Aurora faint to the southward. |
| 16th | 9 59 49,00 | Ditto | 10 41 55,78 | + 6,2 | 9 9 26,78 | 7 26 40,64 | 8 37,79 | 29,730 | —31,5 | .... moderate | ..... | |
| 17th | 9 55 58,00 | Ditto | 10 38 4,91 | + 5,07 | 9 9 26,58 | 7 26 41,00 | 8 37,43 | 29,638 | —28 | ..... | Slight$^{y}$ hazy | |
| 20th | 9 44 21,00 | α Pegasi | 9 23 24,07 | + 5,4 | 9 9 21,55 | 7 26 54,42 | 8 24,01 | 29,409 | —26,2 | NE Light | Sky clear | |
| 22d | 9 36 35,00 | α Andromeda<br>α Pegasi | 10 18 51,20<br>9 15 43,05 | + 5,84 | 9 9 16,77 | 7 27 7,39 | 8 11,04 | 29,341 | —25,5 | NNE Fresh | Sky hazy, through which the star was indistinctly seen at setting. | |
| 24th | 9 29 12,00 | α Pegasi<br>α Andromeda | 9 8 2,18<br>10 11 9,56 | + 3,87 | 9 9 35,02 | 7 26 16,21 | 9 2,22 | 29,820 | —37,2 | ..... Light | Sky clear, except a few light clouds to the eastward, and low down southwward. | |
| 25th | 9 25 15,00 | α Pegasi | 9 4 11,47 | + 5,5 | 9 9 27,98 | 7 26 35,77 | 8 42,66 | 29,795 | —42,2 | NE..... | Sky clear | |
| 27th | 9 17 28,50 | Ditto | 8 56 30,00 | + 6,2 | 9 9 22,85 | 7 26 49,70 | 8 28,73 | 29,847 | —27 | NWb N Fresh | ..... | Star bright and clear at setting. |
| Feb. 2d | 8 54 25,50 | α Andromeda | 9 36 29,55 | + 3,84 | 9 9 28,74 | 7 26 32,54 | 8 45,89 | 30,139 | —40,9 | East moderate | ..... | |
| 10th | 8 23 26,50 | Ditto | 9 05 32,53 | + 4,00 | 9 9 26,47 | 7 26 38,02 | 8 40,41 | 30,211 | —37 | Calm | ..... | |
| | | | | | Means | | 8 36,36 | 29,805 | —27,3 | | | |

## Table IX.

Observations for the Atmospheric Refraction observed by the setting of Arcturus, 1824 and 1825. Apparent Altitude 7° 37′ 8″,14.
By Lieutenant Foster.

| Days. | Time of Arcturus setting by No. 649. | Transit observed. Star. | Transit observed. Time by No. 649. | Rate of 649. | Arcturus. Hor. ∠ at setting. | Arcturus. True altitude. | Observed Refraction. | Barom$^{r}$. at Temp. + 48° | Temp. Fah$^{t}$. | Winds (true). | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Dec. 21st | 11 39 19 | α Andromeda | 12 22 08,75 | +6,2 | 9 8 44,91 | 7 28 43,83 | 8 24,31 | 29,806 | —28,2 | North Light | Sky clear | Star bright at setting; Aurora faint in the SW. |
| 22d | 11 35 35,5 | Ditto | 12 18 16,96 | +4,4 | 9 8 53,1 | 7 28 20,76 | 8 47,38 | 29,877 | —29 | East ..... | Fine & clear | Aurora faint in the SW. |
| 23d | 11 31 42,5 | Ditto | 12 14 25,46 | +4,2 | 9 8 51,50 | 7 28 24,94 | 8 43,20 | 29,802 | —31 | NE ..... | Sky clear | Aurora faint in the SW; star bright. |
| 25th | 11 23 56 | Ditto | 12 06 40,75 | 0,0 | 9 8 49,53 | 7 28 29,92 | 8 38,22 | 29,886 | —25,2 | Calm | Clear | Aurora faint in the SE b S. |
| 26th | 11 20 01 | Ditto | 12 02 50,33 | +5,2 | 9 8 45,07 | 7 28 42,10 | 8 26,04 | 29,989 | —27,8 | ENEmoderate | Sky clear | Aurora faint in the SSW; star twinkled a little before setting. |
| 1825. | | | | | | | | | | | | |
| Jan. 2d | 10 53 03,2 | Ditto | 11 35 51,95 | +5,0 | 9 8 45,29 | 7 28 38,98 | 8 29,16 | 29,881 | —29,4 | East Light | Clear to the westw$^{d}$, hazy in the eastern quarter. | |
| 3d | 10 49 11,5 | α Arietis | 13 29 41 | 0.0 | 9 8 43,57 | 7 28 43,75 | 8 24,39 | 29,835 | —31,5 | ..... | Sky clear, with long streaming white clouds. | |
| 5th | 10 41 34,5 | α Andromeda | 11 24 17,63 | +4,3 | 9 8 50,77 | 7 28 23,04 | 8 45,10 | 29,336 | —36,5 | ..... | Clear over head and to the westward, thin slight haze to the eastward | |
| 7th | 10 33 49,2 | Ditto | 11 16 34,10 | +4.0 | 9 8 48,90 | 7 28 28,56 | 8 39,58 | 29,509 | —35,5 | Calm | Still clear evens | |
| 10th | 10 22 19 | Ditto | 11 05 02,93 | +5 6 | 9 8 49,78 | 7 28 24,88 | 8 43,26 | 29,961 | —35,5 | Easterly Light | Sky clear | |
| 11th | 10 18 34 | Ditto | 11 1 11,25 | +4,0 | 9 8 56,46 | 7 28 05,68 | 8 52,46 | 30,140 | —38,3 | ..... | ..... | Aurora faint to the SSW. |
| 12th | 10 14 38,5 | Ditto | 10 57 20,23 | +4,9 | 9 8 52,17 | 7 28 17,62 | 8 50,51 | 29,953 | —38,5 | ..... | ..... | |
| 15th | 10 03 00 | Ditto | 10 45 45,85 | +4,5 | 9 8 47,59 | 7 28 29,82 | 8 38,32 | 29,711 | —27,5 | ..... | ..... | Aurora faint to the southward. |
| 16th | 9 59 09 | Ditto | 10 41 55,78 | +6,2 | 9 8 46,67 | 7 28 32,18 | 8 35,96 | 29,730 | —31,5 | .... moderate | ..... | |
| 17th | 9 55 17 | Ditto | 10 38 04,91 | +5,07 | 9 8 45,47 | 7 28 35,35 | 8 32,79 | 29,638 | —28 | ..... | Slightly hazy | |
| 20th | 9 43 40,8 | α Pegasi | 9 23 24,07 | +5,4 | 9 8 41,24 | 7 28 46,57 | 8 21,57 | 29,409 | —26,2 | NE Light | Sky clear | |
| 22d | 9 35 57 | α Pegasi / α Andromeda | 9 15 43,05 / 10 18 51,2 | +5,84 | 9 8 38,67 | 7 28 53,44 | 8 14,70 | 29,341 | —25,5 | NNE Fresh | Sky hazy, through which the star was indistinctly seen at setting. | |
| 24th | 9 28 32 | α Pegasi / α Andromeda | 9 08 02,18 / 10 11 9,56 | +3,87 | 9 8 54,91 | 7 28 07,88 | 9 00,26 | 29,820 | —37,2 | .... Light | Sky clear, except a few light clouds to the eastward, and low down southward. | |
| 25th | 9 24 37,8 | α Pegasi | 9 4 11,47 | +5,5 | 9 8 50,68 | 7 28 19,51 | 8 48,63 | 29,795 | —42,2 | NE ..... | Sky clear | |
| 27th | 9 16 49,5 | Ditto | 8 56 30 | +6,2 | 9 8 43,75 | 7 28 38,49 | 8 29,65 | 29,847 | —27 | NWbN Fresh | ..... | Star bright and clear at setting. |
| Feb. 2d | 8 53 48 | α Andromeda | 9 36 29,55 | +3,84 | 9 8 51,14 | 7 28 17,09 | 8 51,05 | 30,139 | —40,9 | East moderate | ..... | |
| | | | | | | Means | 8 35,07 | 29,786 | —32,0 | | | |

## Table X.

### Observations for determining the Apparent Altitude of $\alpha$ Aquilæ at the time of setting, by Lieutenant Foster's *upper* telescope.

The corresponding Observations for Refraction are contained in Tables XI. and XII.

| Day. | Time. | No. of Observations. | Mean reading of four Verniers. | Correction for Index | Correction for Level. | Apparent zenith distance. | Apparent altitude deduced from the apparent zenith distance by the ratio of the No. of observations. | Baromr. at Temp. + 48°. | Temp. Fahr. | Winds True. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. | | ° ′ ″ | ″ | ″ | ° ′ ″ | ° ′ ″ | Inches. | ° | | |
| Jan. 28th | At 11 A.M. | 8 | 323 7 57,5 | 0,0 | +1,0 | 85 23 29,81 | } 4 36 25,97 | 29,970 | — 29,5 | ..... | Occasionally squally |
| —— | 1 30 P.M. | 14 | * 78 38 30,0 | — | +8,25 | 85 23 37,20 | | | | | |
| Feb. 7th | — 11 A.M. | 8 | 323 8 20,0 | 0,0 | —0,5 | 85 23 32,44 | } 4 36 22,17 | 29,455 | — 22,5 | North mod. | |
| —— | 2 P.M. | 8 | *286 18 5,0 | — | +0,75 | 85 23 43,22 | | | | | |
| 9th | — 10 A.M. | 8 | 323 8 1,25 | 0,0 | +3,0 | 85 23 30,53 | } 4 36 21,67 | 29,701 | — 35,7 | Calm Fine & clear | Fine |
| —— | 1 P.M. | 14 | *115 32 16,25 | — | +2,25 | 85 23 44,18 | | | | | |
| — 10th | — 10 30 A.M. | 6 | *152 21 51,25 | — | +3,25 | 85 23 39,08 | } 4 36 21,46 | 30,100 | — 35,5 | Calm | |
| —— | 1 30 P.M. | 6 | *304 43 41,25 | — | —2,0 | 85 23 38,00 | | | | | |
| — 15th | — 11 A.M. | 12 | *304 43 8,75 | — | +2,50 | 85 23 35,94 | 4 36 24,06 | 29,600 | — 33 | Cloudy, overcast weather. | |
| — 28th | — 11 A.M. | 6 | *152 22 1,25 | — | —3,50 | 85 23 39,62 | } 4 36 23,13 | 29,992 | — 21 | NE Light | Clear & fine |
| —— | 1 30 P.M. | 6 | *304 43 25,00 | — | +1,00 | 85 23 34,12 | | | | | |

Mean = the apparent altitude, *upper* telescope 4 36 13,08, being the altitude used in Table XI.

Micrometrical measure of ∠ subtended at the board between the telescopes = + 3 8,42

Apparent altitude for the *lower* telescope 4 39 31,50, being the altitude used in Table XII.

* The principal vernier not reset to zero, and the observations are continued from the preceding reading.

† The number and parts of a revolution in this case being $3^{rev.}\ 96^{div.},7$, we obtain 3′ 9″,22 for the angular distance between the telescopes used in the observations on refractions. The focal length, however, of the telescope to which the micrometer was attached being in the present case 46,19, instead of 46 as before stated, and the above angular distance being reduced in the ratio of 46,19 to 46, we have 3′ 8″,42 for the correct angle subtended by the distance between the upper and lower telescopes.

## Table XI.

**Observations for the Atmospheric Refraction, observed by the setting of α Aquilæ, 1824 and 1825. Apparent Altitude 4° 36′ 32″,08. By Lieutenant Foster.**

| Day. | Time of α Aquilæ setting by No. 423. | Transit Observed. Star. | Transit Observed. Time by No. 423. | Rate of 423. | α Aquilæ. Horary ∠ at setting. | α Aquilæ. True Altitude. | Observed Refraction. | Barom. at Temp. +48°. | Temp. Fah$^t$. | Winds (true.) | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Dec 8th | 3 31 58 | α Arietes. | 2 55 46,28 | + 3,6 | 6 51 24,69 | 4 22 58,87 | 13 24,21 | 29,544 | —18 | NNE Squally | Sky Clear | |
| | Time by 649 | | Time by 649 | Rate 649 | | | | | | | | |
| 11th | 3 34 26 | Ditto | 2 58 16,40 | + 4,9 | 6 51 32,55 | 4 23 07,45 | 13 15,63 | 29,708 | —14 | NNW Fresh | Clear and Fine | |
| 13th | 3 26 59,50 | Ditto | 2 50 34,03 | + 4,0 | 6 51 38,45 | 4 22 42,51 | 13 40,57 | 30,057 | —25 | North Light | Ditto | |
| 14th | 3 23 03 | Ditto | 2 46 45,13 | + 6,4 | 6 51 30,77 | 4 23 14,99 | 13 08,09 | 30,190 | —18,5 | West Ditto | Sky Clear | Star indistinctly seen at setting. |
| 16th | 3 15 24 | Aldebaran | 5 07 12,99 | + 5,7 | 6 51 34,38 | 4 22 59,17 | 13 23,91 | 30,098 | —35 | ENE Ditto | Ditto | Aurora faint to the SW. Some streamers |
| 20th | 2 59 58 | α Arietis | 2 23 38,26 | + 5,0 | 6 51 32,65 | 4 23 05,73 | 13 17,35 | 29,666 | —26,3 | North Ditto | Clear still even$^g$. | Aurora faint to the SW. [NW. |
| 21st | 2 56 02,20 | Ditto | 2 19 48,27 | + 6,2 | 6 51 26,79 | 4 23 32,61 | 12 50,47 | 29,794 | —26,8 | SW Fresh | Sky Clear | Aurora bright to the SW. |
| 22d | 2 52 15 | Ditto | 2 15 56,88 | + 4,4 | 6 51 25,04 | 4 23 37,40 | 12 45,68 | 29,844 | —27,2 | SW Light | Sky Clear & fine | Aurora faint to the SW. |
| 23d | 2 48 24,50 | Ditto | 2 12 4,76 | + 4,2 | 6 51 26,66 | 4 23 30,48 | 12 52,60 | 29,810 | —32 | Calm | Fine Clear even$^g$. | Aurora SW. |
| 25th | 2 40 32,00 | Ditto | 2 4 20,26 | 0,0 | 6 51 24,71 | 4 23 38,35 | 12 44,73 | 29,929 | —26 | NNE Light | Sky Clear | Aurora faint to the westward. |
| 26th | 2 36 43 | Ditto | 2 00 29,36 | + 5,2 | 6 51 26,46 | 4 23 30,87 | 12 52,21 | 29,988 | —26,5 | ENE Moderate | Sky Clear over head, | thin light clouds near the horizon, through which the star was faintly seen at setting. |
| 29th | 2 25 01 | Ditto | 1 48 55,13 | + 4,1 | 6 51 18,67 | 4 24 03,14 | 12 19,94 | 29,666 | —16 | Eastward Light | Fine and Clear | Thin haze near the horizon, but through which, the stars were distinctly seen. |
| 1825. | | | | | | | | | | | | |
| Jan. 1st | 2 13 36,50 | α Ceti | 2 33 03,82 | + 5,2 | 6 51 25,34 | 4 23 33,73 | 12 49,35 | 29,836 | —26 | Ditto Ditto | Sky Clear | Star bright at setting. |
| 2d | 2 9 48,40 | α Arietis | 1 33 32,33 | + 4,6 | 6 51 28,78 | 4 23 19,03 | 13 04,05 | 29,847 | —30 | Ditto Ditto | Thin white clouds to the SW. Star set very bright. | |
| 3d | 2 5 56,50 | Ditto | 1 29 41,00 | — 2,9 | 6 51 28,28 | 4 23 21,04 | 13 02,04 | 29,828 | —33 | Ditto Mod. | Sky Clear | Star bright at setting. [parts. |
| 5th | 1 58 12,80 | Ditto | 1 21 56,76 | + 4,3 | 6 51 28,71 | 4 23 18,93 | 13 04,15 | 2 9356 | —35,5 | Ditto Light | Thin haze to the eastward, perfectly clear in other | |
| 6th | 1 57 17,50 | Ditto | 1 18 5,36 | + 4,55 | 6 51 24,81 | 4 23 35,10 | 12 47,98 | 29,322 | —32,2 | North Ditto | Hazy | Star distinctly seen at setting. |
| 10th | 1 39 2,00 | Ditto | 1 2 42,78 | + 5,6 | 6 51 32,77 | 4 23 01,21 | 13 21,87 | 30 050 | —35,5 | Easterly Ditto | Clear | |
| 11th | 1 35 16,00 | Ditto | 0 58 50,31 | + 4,0 | 6 51 38,27 | 4 22 38,03 | 13 45,05 | 30 125 | —39,3 | Ditto Ditto | Sky Clear | Aurora faint to the SSW. |
| 12th | 1 31 21,00 | Ditto | 0 54 59,36 | + 4,9 | 6 51 34,16 | 4 22 55,11 | 13 27,97 | 29 984 | —38,7 | Ditto Ditto | Ditto | Stars very bright. |
| 15th | 1 19 42,80 | Ditto | 0 43 25,66 | + 4,5 | 6 51 28,60 | 4 23 18,14 | 13 04,94 | 29,732 | —28 | Ditto Ditto | Clear and Fine | Aurora faint to the south$^d$. Stars somewhat obscured at setting. |
| 16th | 1 15 53,80 | Ditto | 0 39 36,36 | + 6,2 | 6 51 29,82 | 4 23 12,70 | 13 10,38 | 29,754 | —32,8 | Ditto Mod. | Sky Clear | Stars bright. Aurora faint in SW near horizon. |
| 17th | 1 12 03,20 | Ditto | 0 35 45,56 | + 5,07 | 6 51 30,03 | 4 23 11,67 | 13 11,41 | 29,622 | —26,5 | Ditto Fresh | Somewhat Hazy | Aurora faint low down to the WSW. |
| 18th | 1 08 06,80 | Ditto | 0 31 53,48 | + 4,1 | 6 51 25,71 | 4 23 29,38 | 12 53,70 | 29,561 | —23 | NE Strong | Sky Clear | Aurora faint SW. Star somewhat indistinct at setting in consequence of drift. |
| 20th | 1 00 24,50 | Ditto | 0 24 12,47 | + 5,4 | 6 51 27,34 | 4 23 22,51 | 13 00,57 | 29,372 | —29 | North Light | Ditto | Aurora faint near horizon to the southw$^d$. |
| 25th | 0 41 22,50 | Ditto | 0 05 00,32 | + 5,5 | 6 51 34,37 | 4 22 52,36 | 13 30,72 | 29,787 | —43,2 | Easterly Ditto | Ditto | A few thin clouds to the S. about the moon |
| 27th | 12 33 44,50 | Ditto | 11 57 19,53 | + 6,2 | 6 51 37,12 | 4 22 40,56 | 13 42,52 | 29,836 | —28 | NW Fresh | Ditto | Star bright at setting. |
| Feb. 2d | 12 10 35,00 | Ditto | 11 34 10,08 | + 3,84 | 6 51 36,92 | 4 22 40,58 | 13 42,50 | 30,229 | —41,5 | East Light | Ditto | |
| 4th | 12 02 36,50 | α Arietis / α Cetis | 11 26 23,40 / 12 22 03,68 | + 2,91 | 6 51 24,91 | 4 23 30,61 | 12 52,47 | 30,056 | —19,5 | ENE Strong and squally, sky clear over head, considerable drift, but the star bright at setting. | | |
| 7th | 11 59 59,50 | α Arietis / α Ceti | 11 14 47,94 / 12 10 28,17 | + 4,1 | 6 51 23,22 | 4 23 37,31 | 12 45,77 | 29,583 | —26,5 | Calm, Clear and very fine. | | Faint twilight to the westward. |
| 8th | 11 47 21,80 | α Androm. / α Ceti | 9 13 16,55 / 12 06 36,50 | + 4,33 | 6 51 37,05 | 4 22 39,29 | 13 43,79 | 29,745 | —37 | Calm Clear still evening. | | |
| 9th | 11 43 25,20 | α Arietis / α Ceti | 11 07 04,25 / 12 2 44,95 | + 4,41 | 6 51 32,11 | 4 22 59,85 | 13 23,23 | 29,959 | —37,6 | Eastward Light | Sky perfectly clear. | |
| | | | | | | Means | 13 09,37 | 29,808 | —29,0 | | | |

# Table XII.

## Observations for the Atmospheric Refraction, observed by the setting of α Aquilæ, 1824 and 1825. Apparent Altitude 4° 39′ 31″,50. By Lieutenant Foster.

| Days. | Time of α Aquilæ setting by No. 649. | Transit observed. Star. | Transit observed. Time by 649. | Rate of 649. | α Aquilæ. Hor. ∠ at setting. | α Aquilæ. True altitude. | Observed Refraction. | Barom. at Temp. + 48°. | Temp. Faht. | Winds (true). | Weather. | Remarks. &c. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Dec. 20th | 2 59 11 | α Arietis | 2 23 38,26 | +5,0 | 6 50 45,52 | 4 26 23,13 | 13 8,37 | 29,666 | —26,3 | Clear still evening | | Aurora faint to the SW. |
| 21st | 2 55 15 | Ditto | 2 19 48,27 | +6,2 | 6 50 39,49 | 4 26 48,2 | 12 43,3 | 29,794 | —26,8 | North Fresh | Sky clear | Aurora bright to the SW. |
| 25th | 2 39 49,5 | Ditto | 2 4 20,26 | 0,0 | 6 50 42,09 | 4 26 36,69 | 12 54,81 | 29,929 | —26 | NNE Light | ..... | Aurora faint to the westward. |
| 29th | 2 24 16 | Ditto | 1 48 55,13 | +4,1 | 6 50 33,51 | 4 27 12,28 | 12 19,52 | 29,666 | —16 | Eastward .... | Fine & clear | Thin haze near the horizon, through which the stars were distinctly seen. |
| 1825. | | | | | | | | | | | | |
| Jan. 1st | 2 12 51,5 | α Ceti | 2 33 03,82 | +5,2 | 6 50 40,22 | 4 26 42,82 | 12 48,68 | 29,836 | —26 | ..... | Sky clear | Star bright at setting. |
| 2d | 2 09 00 | α Arietis | 1 33 32,33 | +4,6 | 6 50 40,25 | 4 26 42,7 | 12 48,80 | 29,847 | —30 | ..... | Thin white clouds to the SW; star set very bright. | |
| 3d | 2 05 09 | Ditto | 1 29 41,00 | —2,9 | 6 50 40,65 | 4 26 40,55 | 12 50,95 | 29,828 | —33 | .... moderate | Sky clear; star bright at setting. | |
| 5th | 1 57 26 | Ditto | 1 21 56,76 | +4,3 | 6 50 41,78 | 4 26 35,74 | 12 55,76 | 29,356 | —35,5 | .... Light | Thin haze to the eastward, perfectly clear in other parts. | |
| 6th | 1 53 33,5 | Ditto | 1 18 05,36 | +4,55 | 6 50 40,69 | 4 26 39,91 | 12 51,59 | 29,322 | —32,2 | North .... | Hazy | Star distinctly seen at setting. |
| 10th | 1 38 19 | Ditto | 1 02 42,78 | +5,6 | 6 50 49,65 | 4 26 01,8 | 13 29,70 | 30,050 | —35,5 | Easterly .... | Clear | |
| 11th | 1 34 29,7 | Ditto | 0 58 50,31 | +4,0 | 6 50 51,84 | 4 25 52,11 | 13 39,39 | 30,125 | —39,3 | ..... | Sky clear | Aurora faint to the SSW. |
| 12th | 1 30 35 | Ditto | 0 54 59,36 | +4,9 | 6 50 48,03 | 4 26 8,35 | 13 23,15 | 29,984 | —38,7 | ..... | ..... | Star bright. |
| 15th | 1 18 58,5 | Ditto | 0 43 25,66 | +4,5 | 6 50 44,18 | 4 26 23,96 | 13 7,54 | 29,732 | —28 | ..... | Clear & fine | Aurora faint to the southward, star somewhat obscured at setting. |
| 16th | 1 15 07,5 | Ditto | 0 39 36,36 | +6,2 | 6 50 42,39 | 4 26 31,35 | 13 00,15 | 29,754 | —32,8 | .... moderate | Sky clear | Stars bright; Aurora faint in the SW near horizon. |
| 17th | 1 11 16,8 | Ditto | 0 35 45,56 | +5,07 | 6 50 43,50 | 4 26 30,25 | 13 1,25 | 29,622 | —26,5 | .... Fresh | Somewhat hazy | Aurora faint near horizon to the WSW. |
| 20th | 0 59 39,5 | Ditto | 0 24 12,47 | +5,4 | 6 50 42,22 | 4 26 31,6 | 12 59,90 | 29,372 | —29 | Northw. light | Sky clear | Aurora faint near horizon to the southward. |
| 25th | 0 40 38,4 | Ditto | 0 05 00,32 | +5,5 | 6 50 50,15 | 4 25 57,55 | 13 33,95 | 29,787 | —43,2 | Easterly .... | ..... | A few thin clouds to the southward about the moon. |
| 27th | 0 32 54,2 | Ditto | 11 57 19,53 | +6,2 | 6 50 46,68 | 4 26 11,79 | 13 19,71 | 29,836 | —28 | NW Fresh | ..... | Star bright at setting. |
| Feb. 2d | 12 09 47,8 | Ditto | 11 34 10,08 | +3,84 | 6 50 49,59 | 4 25 58,75 | 13 32,75 | 30,229 | —41,5 | Easterly Light | | |
| 4th | 12 01 53,5 | α Arietis / α Ceti | 11 26 23,4 / 12 22 3,68 | +2,91 | 6 50 41,79 | 4 26 31,22 | 13 00,28 | 30,056 | —19,5 | ENE strong and squally. Sky clear over head, considerable drift; star bright at setting. | | |
| 7th | 11 50 10,9 | α Arietis / α Ceti | 11 14 47,94 / 12 10 28,17 | +4,1 | 6 50 34,49 | 4 27 01,45 | 12 30,05 | 29,583 | —26,5 | Calm, clear and very fine; faint twilight to the westward. | | |
| 8th | 11 46 32,8 | α Andromeda / α Ceti | 9 13 16,55 / 12 6 36,5 | +4,33 | 6 50 47,92 | 4 26 05,03 | 13 26,47 | 29,745 | —37 | Calm, clear still evening. | | |
| 9th | 11 42 40,2 | α Arietis / α Ceti | 11 7 04,25 / 12 2 44,95 | +4,41 | 6 50 46,99 | 4 26 8,81 | 13 22,69 | 29,959 | —37,6 | Eastward Light; sky perfectly clear. | | |
| | | | | | | Means | 13. 4,73 | 29,742 | —31,1 | | | |

## Table XIII.

**Observations for the Atmospheric Refraction observed by the setting of Arcturus, 1824-25. Apparent Altitude 7° 38′ 0,″52. By Lieutenant Ross.**

| Date. | Time of Arcturus setting reduced to 649. | Transit Observed. Star. | Transit Observed. Time by 649. | Rate of 649 Gaining. | Arcturus's Horary ∠ at setting. | Arcturus's True Altitude. | Observed Refraction. | Barom. at Temp. + 50°. | Temp. Fah$^{t}$. | Winds True. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Dec. 15th | 12 02 10,8 | α Andromedæ | 12 45 13,63 | 5,4 | 9 8 31,98 | 7 29 21,2 | 8 39,51 | 30,334 | —35 | NE$^{y}$ Light | Very Clear | |
| 21st | 11 38 58 | Ditto | 12 22 8,75 | 6,2 | 9 8 23,95 | 7 29 41,79 | 8 18,93 | 29,819 | —28,2 | North Ditto | Ditto | Aurora SW to S faint. |
| 26th | 11 19 34 | Ditto | 12 02 50,33 | 5,22 | 9 8 18,01 | 7 29 57,17 | 8 3,55 | 29,984 | —27,8 | ENE Moderate | Ditto | Aurora SSW faint. |
| 1825. | | | | | | | | | | | | |
| Jan. 4th | 10 44 59 | Ditto | 11 28 9,42 | 3,8 | 9 8 23,44 | 7 29 38,67 | 8 21,85 | 29,485 | —27,2 | Ditto Squally | Hazy near hori$^{n}$. | Star very distinct. |
| 5th | 10 41 05,5 | Ditto | 11 24 17,63 | 4,30 | 9 8 21,68 | 7 29 43,66 | 8 16,86 | 29,345 | —36,5 | East Light | Ditto | Star clear. |
| 6th | 10 37 14,7 | Ditto | 11 20 26,2 | 4,55 | 9 8 22,27 | 7 29 41,58 | 8 18,94 | 29,263 | —32,2 | Ditto Ditto | Ditto | Ditto. |
| 7th | 10 33 23,7 | Ditto | 11 16 34,1 | 4,0 | 9 8 23,32 | 7 29 38,46 | 8 22,06 | 29,525 | —35,5 | Ditto Ditto | Very Clear | |
| 10th | 10 21 53 | Ditto | 11 5 2,93 | 5,6 | 9 8 23,71 | 7 29 36,88 | 8 23,64 | 29,955 | —35,5 | Ditto Ditto | Ditto | |
| 11th | 10 18 11 | Ditto | 11 1 11,25 | 4,0 | 9 8 33,32 | 7 29 10,19 | 8 50,33 | 30,136 | —38,3 | Ditto Ditto | Ditto | |
| 12th | 10 14 13 | Ditto | 10 57 20,23 | 4,9 | 9 8 26,29 | 7 29 29,52 | 8 31,0 | 29,946 | —38,4 | Ditto Ditto | Ditto | |
| 15th | 10 2 34,5 | Ditto | 10 45 45,85 | 4,5 | 9 8 22,01 | 7 29 26,61 | 8 33,91 | 29,708 | —27,5 | Ditto Ditto | Ditto | Faint twilight west. [horizon. |
| 16th | 9 58 43,5 | Ditto | 10 41 55,78 | 6,2 | 9 8 21,10 | 7 29 43,04 | 8 17,48 | 29,730 | —31,2 | East Moderate | Ditto | Aurora faint SSW near |
| 17th | 9 54 52,7 | Ditto | 10 38 4,91 | 5,07 | 9 8 21,07 | 7 29 42,83 | 8 17,69 | 29,638 | —28 | Ditto Ditto | { Some light Clouds } | Star twinkling. |
| 20th | 9 43 16 | α Pegasi | 9 23 24,07 | 5,4 | 9 8 16,35 | 7 29 56,4 | 8 4,12 | 29,404 | —26,2 | North Ditto | Clear | Twilight strong, |
| 24th | 9 28 03 | α Andromedæ | 10 11 9,56 | 3,87 | 9 8 26,46 | 7 29 26,61 | 8 33,91 | 29,822 | —37,2 | NE Light | Ditto | |
| 25th | 9 24 10 | α Pegasi | 9 4 11,47 | 5,5 | 9 8 22,78 | 7 29 36,8 | 8 23,72 | 29,793 | —42,2 | Ditto Ditto | Very Clear | |
| 27th | 9 16 26 | Ditto | 8 56 30 | 6,2 | 9 8 20,17 | 7 29 43,87 | 8 16,65 | 29,846 | —27 | NW Fresh | Clear with drift | Star clear. |
| | | | | | | Mean | 8 23,18 | 29,749 | —32,6 | | | |

Observations for the Atmospheric Refraction observed by the setting of α Aquilæ, 1825. Apparent Altitude 4° 37′ 41,″08.
By Lieutenant Ross.

| Date. | Time of α Aquilæ's setting reduced to 649. | Transit Observed. Star. | Transit Observed. Time by No. 649. | Rate of No. 649. gaining. | α Aquilæ's Horary ∠ at setting. | α Aquilæ's True Altitude. | Observed Refraction. | Barom. at Temp. + 50°. | Temp. Fah$^{t}$. | Winds True. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Jan. 5th | 13 57 50,3 | α Arietis | 13 21 56,76 | 4,3 | 6 51 06,10 | 4 24 52,75 | 12 48,33 | 29,356 | —35,7 | East Light. | ...Clear | |
| 6th | 13 53 59,5 | Ditto | 13 18 05,36 | 4,55 | 6 51 06,72 | 4 24 51,1 | 12 49,98 | 29,322 | —32,2 | | | |
| 7th | 13 50 09,1 | Ditto | 13 14 13,44 | 4,00 | 6 51 08,25 | 4 24 44,29 | 12 56,79 | 29,557 | —36 | ..... | Very Clear | |
| 10th | 13 38 41,5 | Ditto | 13 02 42,78 | 5,60 | 6 51 11,28 | 4 24 30,02 | 13 11,06 | 30,054 | —35,5 | ..... | ..... | |
| 11th | 13 34 53,7 | Ditto | 12 58 50,31 | 4,0 | 6 51 15,93 | 4 24 10,56 | 13 30,52 | 30,127 | —39,3 | ..... | ..... | |
| 12th | 13 30 58,5 | Ditto | 12 54 59,36 | 4,9 | 6 51 11,58 | 4 24 29,67 | 13 11,41 | 29,983 | —38,7 | ..... ..... | ..... | |
| 15th | 13 19 24 | Ditto | 12 43 25,66 | 4,5 | 6 51 10,74 | 4 24 34,99 | 13 06,09 | 29,737 | —28 | ..... | ..... | Star rather dim at setting. |
| 16th | 13 15 31 | Ditto | 12 39 36,36 | 6,2 | 6 51 06,95 | 4 24 49,07 | 12 52,01 | 29,759 | —32,8 | SW Moderate | [drift. | |
| 17th | 13 11 40,3 | Ditto | 12 35 45,56 | 5,07 | 6 51 07,46 | 4 24 46,79 | 12 54,29 | 29,623 | —26,5 | East Fresh | Squally with snow | Hazy near the horizon. |
| 20th | 13 00 04,8 | Ditto | 12 24 12,47 | 5,40 | 6 51 04,56 | 4 24 57,31 | 12 43,77 | 29,372 | —29 | North Light | Very Clear | |
| | | | | | | Mean | 13 00,42 | 29,689 | —33,37 | | | |

## Table XV.

Observations for the Atmospheric Refraction observed by the setting of α Aquilæ, 1824-25. Apparent Altitude 4° 36′ 3,″88.
By Lieutenant Ross.

| Date. | Time of α Aquilæ's setting reduced to 649. | Transit Observed. Star. | Transit Observed. Time by No. 649. | Rate of No. 649. gaining. | α Aquilæ's Horary ∠ at setting. | α Aquilæ's True Altitude. | Observed Refraction. | Barom. at Temp. + 50°. | Temp. Fah$^{t}$. | Winds True. | Weather. | Remark. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Dec. 26th | 14 36 43,7 | α Arietis | 14 00 29,36 | 5,2 | 6 51 27,16 | 4 23 27,74 | 12 36,14 | 29,987 | —26,5 | East Fresh | | Star dim at time of setting. |
| 29th | 14 25 05,8 | Ditto | 13 48 55,13 | 4,10 | 6 51 23,47 | 4 23 43,69 | 12 20,19 | 29,666 | —16 | Ditto Light | Fine Clear | |
| 1825. | | | | | | | | | | | | |
| Jan. 5th | 13 58 16,3 | Ditto | 13 21 56,76 | 4,30 | 6 51 32,16 | 4 23 05,18 | 12 58,70 | 29,356 | —35,7 | ..... | ..... | |
| 6th | 13 54 24,3 | Ditto | 13 18 05,36 | 4,55 | 6 51 31,6 | 4 23 07,25 | 12 56,63 | 29,322 | —32,2 | ..... | Clearoverhead | Hazy near horizon. |
| 7th | 13 50 32,5 | Ditto | 13 14 13,44 | 4,00 | 6 51 31,72 | 4 23 07 | 12 56,88 | 29,557 | —36 | ..... | Very Clear | |
| 10th | 13 39 05,2 | Ditto | 13 02 42,78 | 5,60 | 6 51 35,04 | 4 22 51,72 | 13 12,16 | 30,054 | —35,5 | ..... | ..... | |
| 11th | 13 35 18 | Ditto | 12 58 50,31 | 4,00 | 6 51 40,29 | 4 22 29 | 13 34,88 | 30,127 | —39,3 | ..... | ..... | |
| 12th | 13 31 23,5 | Ditto | 12 54 59,36 | 4,90 | 6 51 36,65 | 4 22 44,72 | 13 19,16 | 29,983 | —38,7 | ..... | ..... | |
| 15th | 13 19 49 | Ditto | 12 43 25,66 | 4,50 | 6 51 35,79 | 4 22 47,81 | 13 16,07 | 29,737 | —28 | ..... | ..... | |
| 16th | 13 15 55,5 | Ditto | 12 39 36,36 | 6,2 | 6 51 31,52 | 4 23 06,42 | 12 57,46 | 29,759 | —32,8 | SW Moderate | ..... | Star dim at setting. |
| 17th | 13 12 03,8 | Ditto | 12 35 45,56 | 5,07 | 6 51 30,62 | 4 23 09,73 | 12 54,15 | 29,623 | —26,5 | East Fresh | Squally with snow drift. | |
| 20th | 13 00 28 | Ditto | 12 24 12,47 | 5,4 | 6 51 27,83 | 4 23 20,08 | 12 43,80 | 29,372 | —29 | North Light | Very Clear | |
| | | | | | | Mean | 12 58,85 | 29,712 | 31,35 | | | |

## Table XVI.

Observations for the Atmospheric Refraction observed by the setting of α Aquilæ, 1825. Apparent Altitude 4° 40′ 38″. By Lieutenant Ross.

| Date. | Time of α Aquilæ's setting reduced to 649. | Transit observed. Star. | Transit observed. Time by 649. | Rate of 649. Gaining. | α Aquilæ's Horary ∠ at setting. | α Aquilæ's True altitude. | Observed Refraction. | Barometer at Temp. + 50°. | Temp. Fahr. | Winds True. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1825. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Jan. 5th | 13 57 06,3 | α Arietis | 13 21 56,76 | 4,3 | 6 50 22,02 | 4 27 57,1 | 12 40,9 | 29,356 | —35,7 | East Light | Clear | [westward. |
| 6th | 13 53 15,8 | Ditto | 13 18 05,36 | 4,55 | 6 50 22,90 | 4 27 54,0 | 12 44 | 29,322 | —32,2 | ..... | ..... | Hazy, near horizon to the |
| 7th | 13 49 25,5 | Ditto | 13 14 13,44 | 4,0 | 6 50 24,53 | 4 27 47,0 | 12 51 | 29,557 | —36 | ..... | Very clear | Aurora SW. |
| 10th | 13 37 57,5 | Ditto | 13 02 42,78 | 5,6 | 6 50 27,15 | 4 27 36,44 | 13 01,56 | 30,054 | —35,5 | ..... | ..... | |
| 11th | 13 34 11 | Ditto | 12 58 50,31 | 4,0 | 6 50 33,10 | 4 27 10,97 | 13 27,03 | 30,127 | —39,3 | ..... | ..... | |
| 12th | 13 30 13,8 | Ditto | 12 54 59,36 | 4,9 | 6 50 26,76 | 4 27 38,09 | 12 59,91 | 29,983 | —38,7 | ..... | ..... | |
| 15th | 13 18 39,5 | Ditto | 12 43 25,66 | 4,5 | 6 50 26,13 | 4 27 40,17 | 12 57,83 | 29,737 | —28 | ..... | ..... | Star rather dim at setting. |
| 16th | 13 14 46,7 | Ditto | 12 39 36,36 | 6,2 | 6 50 22,53 | 4 27 54,2 | 12 43,8 | 29,759 | —32,8 | SW moderate | ..... | |
| 17th | 13 10 56,3 | Ditto | 12 35 45,56 | 5,07 | 6 50 22,95 | 4 27 52,13 | 12 45,87 | 29,623 | —26,5 | East Fresh | Clear | Squally with snow drift. |
| 20th | 12 59 21,3 | Ditto | 12 24 12,47 | 5,4 | 6 50 20,94 | 4 28 00,0 | 12 38,0 | 29,372 | —29 | North Light | Very clear | |
| | | | | | | Means | 12 48,17 | 29,785 | —33,37 | | | |

## Table XVII.

Observations for the Atmospheric Refraction observed by the setting of α Aquilæ, 1824-25. Apparent Altitude 4° 39′ 01″,8. By Lieutenant Ross.

| Date. | Time of α Aquilæ's setting reduced to 649. | Transit observed. Star. | Transit observed. Time by 649. | Rate of 649. Gaining. | α Aquilæ's Horary ∠ at setting. | α Aquilæ's True altitude. | Observed Refraction. | Barometer at Temp. + 50°. | Temp. Fahr. | Winds True. | Weather. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1824. | h. m. s. | | h. m. s. | s. | h. m. s. | ° ′ ″ | ′ ″ | Inches. | ° | | | |
| Dec. 14th | 15 22 21,2 | α Arietis | 14 46 45,13 | 6,4 | 6 50 46,90 | 4 26 18,0 | 12 43,8 | 30,189 | —28,2 | WNW Light | Clear | |
| 20th | 14 59 13,6 | Ditto | 14 23 38,26 | 5,0 | 6 50 48,12 | 4 26 11,6 | 12 50,2 | 29,674 | —26,3 | North .... | ..... | |
| 23d | 14 47 39,5 | Ditto | 14 12 04,76 | 4,2 | 6 50 47,49 | 4 26 14,7 | 12 47,1 | 29,810 | —32 | Calm | ..... | |
| 26th | 14 35 59,5 | Ditto | 14 00 29,36 | 5,2 | 6 50 42,83 | 4 26 34,35 | 12 26,45 | 29,987 | —26,5 | East Fresh | ..... | |
| 29th | 14 24 20,6 | Ditto | 13 48 55,13 | 4,1 | 6 50 38,13 | 4 26 52,55 | 12 09,25 | 29,666 | —16 | .... Light | ..... | Star dim at time of setting. |
| 1825. | | | | | | | | | | | | |
| Jan. 5th | 13 57 31,5 | Ditto | 13 21 56,76 | 4,3 | 6 50 47,28 | 4 26 12,42 | 12 49,38 | 29,356 | —35,7 | ..... | ..... | |
| 6th | 13 53 40,3 | Ditto | 13 18 05,36 | 4,55 | 6 50 47,47 | 4 26 11,39 | 12 50,41 | 29,322 | —32,2 | ..... | Clear overhead, hazy near horizon. | |
| 7th | 13 49 49,8 | Ditto | 13 14 13,44 | 4,0 | 6 50 48,9 | 4 26 05,18 | 12 56,62 | 29,557 | —36 | ..... | Very clear | |
| 10th | 13 38 21 | Ditto | 13 02 42,78 | 5,6 | 6 50 50,71 | 4 25 55,86 | 13 05,94 | 30,054 | —35,5 | ..... | ..... | |
| 11th | 13 34 35 | Ditto | 12 58 50,31 | 4,0 | 6 50 57,17 | 4 25 30,64 | 13 31,16 | 30,127 | —39,3 | ..... | ..... | |
| 12th | 13 30 38 | Ditto | 12 54 59,36 | 4,9 | 6 50 51,03 | 4 25 54,82 | 13 06,98 | 29,983 | —38,7 | ..... | ..... | |
| 15th | 13 19 03 | Ditto | 12 43 25,66 | 4,5 | 6 50 49,68 | 4 25 59,59 | 13 12,21 | 29,737 | —28 | ..... | ..... | Star rather dim at setting. |
| 16th | 13 15 11,5 | Ditto | 12 39 36,36 | 6,2 | 6 50 47,39 | 4 26 10,35 | 12 56,45 | 29,759 | —32,8 | SW moderate | ..... | |
| 17th | 13 11 19,5 | Ditto | 12 35 45,56 | 5,07 | 6 50 46,21 | 4 26 11,81 | 12 50,0 | 29,623 | —26,5 | East Fresh | Squally with snow drift, hazy near horiz. | |
| 20th | 12 59 43,8 | Ditto | 12 24 12,47 | 5,4 | 6 50 43,50 | 4 26 26,71 | 12 35,09 | 29,372 | —29 | North Light | Very clear. | |
| | | | | | | Means | 12 51,4 | 29,748 | —30,85 | | | |

On looking over each individual's observations, it will be seen, that great changes in the amount of atmospherical refraction took place, without any correspondent change in the state of either the barometer or thermometer; and, although the mode of observation adopted by us, is not wholly free from objection, inasmuch, as the ray of light from a bright star may suffer some degree of inflection, by passing over a sharp edge (such as the boards placed edge-wise would present, whereby their apparent altitudes would not be exactly those of the stars at the time of observation); yet we do not consider this circumstance the cause of the anomaly alluded to, for we never entertained the slightest doubt as to the moment of either of the stars' disappearance, both being always instantaneous: and, moreover, when it is recollected, that the use of instruments, proper for measureing altitudes on these occasions, in such a climate, is attended with the difficulties already described in this Paper, it will, in all probability be admitted, that this mode of observation, is at least, calculated to diminish the errors necessarily arising from the use of instruments, under such circumstances.

It is, however, with diffidence that we submit the following tabulated results of the preceding observations, for comparison with the various theories, which have from time to time been advanced by many eminent astronomers and mathematicians, to account for all the irregularities which have been noticed in the most careful observations on this important subject.

Recapitulation of the mean results, of the preceding Observations.

| Stars Observed. | Apparent Altitude. | Barometer Corrected. | Temperat. Fahrenheit. | Obser ved Refraction. | No. of Obser. | Observer. |
|---|---|---|---|---|---|---|
| | ° ′ ″ | Inches. | ° | ′ ″ | | |
| Arcturus | 7 38 0,52 | 29,749 | —32,6 | 8 23,18 | 17 | Lieut. Ross. |
| | 7 37 8,14 | 29,786 | —32,0 | 8 35,07 | 21 | Lieut. Foster. |
| | 7 35 18,43 | 29,805 | —27,3 | 8 36,36 | 37 | Lieut. Foster. |
| | 7 31 38,62 | 29,791 | —23,58 | 8 23,95 | 34 | Capt. Parry. |
| α Aquilæ | 4 40 38,0 | 29,785 | —33,37 | 12 48,17 | 10 | Lieut. Ross. |
| | 4 39 31,5 | 29,742 | —31,1 | 13 4,73 | 23 | Lieut. Foster. |
| | 4 39 1,8 | 29,748 | —30,85 | 12 51,4 | 15 | Lieut. Ross. |
| | 4 38 58,03 | 29,795 | —31,8 | 13 4,72 | 24 | Capt. Parry. |
| | 4 37 41,08 | 29,689 | —33,37 | 13 0,42 | 10 | Lieut. Ross. |
| | 4 36 32,08 | 29,808 | —29,0 | 13 9,37 | 32 | Lieut. Foster. |
| | 4 36 3,88 | 29,712 | —31,35 | 12 58,85 | 12 | Lieut. Ross. |
| | 4 32 32,34 | 29,761 | —29,94 | 13 12,51 | 27 | Capt. Parry. |

The original register of the height of the mercury in the barometer, after being corrected for instrumental errors, has been brought up to the temperature of + 50° of Fahrenheit, in the observations by Captain Parry and Lieutenant Ross, but to + 48° only, in the observations by Lieutenant Foster.

BRITISH MUSEUM NATURAL HISTORY

Port Bowen, July 10th, 1825.

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